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ALTERNATIVE HEALTH CARE PROVIDER USE IN THE CHRONIC NON-MALIGNANT PAIN POPULATION

BY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Alternative Health Care Provider use in the Chronic Non-Malignant Pain Population submitted by Jean McClennon-Leong in partial fulfillment of the requirements for the degree of Master of Nursing.

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ABSTRACT

The purpose of this study was to determine the prevalence and incidence of alternative therapy use by Canadians, particularly those people with chronic non-malignant pain. A cross-sectional secondary analysis was undertaken on data obtained from the National Population Health Survey conducted by Statistics Canada in 1994-95. This study is the first national study undertaken by Statistics Canada to obtain comprehensive epidemiologic data about alternative therapy use. A total of 17,332 cases were analyzed revealing that 15% of people reported using some form of alternative therapy in the past year. Chiropractors were most commonly used with 11% of the population seeking out their services. Overall, 5% of the population used another type of provider; massage therapy and homeo/naturopathy were most frequently used. Rates of use were higher in the western provinces where chiropractor services are subsidized by provincial health insurance plans. Differences between use of alternative therapies were evident between the general population and those experiencing pain. People with pain used alternative therapies more than those without pain. In both groups, alternative therapy was more frequently used by women, and those people with higher incomes and education. Cultural backgrounds also influence patterns of use. People who experienced high levels of emotional stress and frequently utilized various health care providers and services tended to seek out alternative providers more often.

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CHAPTER I

Introduction

Statement of the Problem

Studies indicate that the incidence of chronic non-malignant pain is rising throughout the world and that chronic pain represents a major public health problem (Bonica, 1990; Crombie, Davies, & Macrae, 1994). A recent study conducted by Birse (1994) in the Edmonton area indicated that 44.3% of the population is affected by chronic non-malignant pain.

Chronic pain is a complex physiological and psychosocial phenomenon not easily treated by conventional medical methods (Simon, 1989; Zitman, Linssen, Edelbrook, & Stijnen, 1990). Individuals become trapped in vicious circles of psychosocial disruption involving pain, depression, loss of income, and altered family relationships and lifestyles (Barton, 1995). As a result, when treating chronic pain, conventional medical methods such as pharmaceutical and surgical interventions often fail. Consequently, people experiencing chronic non-malignant pain may seek out alternative therapies in conjunction with conventional medical treatments. Alternative therapies may provide additional helpful remedies, aid in supporting the personal, lived experience of illness within disease, and offer hope in maintenance of health and care during illness (Buckman & Sabbagh, 1995; Kleinman, 1981).

Need for the Study

It is important for nurses to understand the impact of chronic pain within the population and the types of treatments or therapies that people use to help manage their

pain. With the information this study will produce, nursing knowledge about the variety and prevalence of alternative therapies will be enhanced. Many of the alternative therapies that are sought by people are non-invasive cognitive-behavioral techniques that return personal control of the illness experience to the individual. Nurses are in a unique position to safely provide these therapies within the therapeutic relationship, and to teach multiple self-care modalities in order to enable individuals to better manage their pain.

Statement of the Purpose

The purpose of the study is to answer the question: Of those people experiencing chronic non-malignant pain, what is the extent and use of alternative therapies, and which of these therapies are most commonly used? Other questions relevant to this question include:

1. What is the prevalence of chronic non-malignant pain and the demographic characteristics of those people with chronic non-malignant pain in the population?
2. Do people with chronic non-malignant pain use alternative therapies differently than those without pain?
3. Is gender, age, level of income, education and ethnic origin related to alternative therapy use?
4. Are there regional differences in alternative therapy use?
5. Are health and lifestyle behaviors, mental health perceptions, patterns of health care utilization, and demographic characteristics different in those people with pain in the chronic non-malignant pain population as compared to those without

pain, and do these differences influence alternative health care use?

1)Specific health and lifestyle behaviors include: 1) exercise, smoking, alcohol, drug use, and disability days;

2) Mental health perceptions include: 1) general health, self-esteem, social support, sense of coherence, and mental stress;

3) Utilization of health care services such as physicians, nurses, physiotherapists, psychologists, and overnight hospital stays.

Definition of Terms

CHRONIC NON-MALIGNANT PAIN: 1) Pain that persists beyond normal healing time for an acute injury or disease which is generally greater than six months; 2) Pain related to chronic musculoskeletal, visceral, and vascular disorders; 3) Pain that recurs at intervals for months or years; 4) Pain that is not associated with malignant disease (Bonica, 1990; Corey, 1988; Mersky & Bogduk, 1994; Smith, Airey, & Salmond, 1990; Walding, 1991).

ALTERNATIVE THERAPIES: 1) Interventions or treatments either self-administered or administered by family, friends, or a practitioner; 2) Interventions that are not generally prescribed by a doctor and are considered to be outside the realm of conventional medical practices.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter includes a review of the literature on chronic non-malignant pain and the use of alternative providers within the Canadian population. The rationale for conducting the current study is substantiated in the review of research which identifies the high prevalence of chronic non-malignant pain and the increasing interest in alternative therapies. The literature suggests that people with chronic conditions such as pain may frequently use alternative therapies. In order to explore these issues, an overview of the literature of selected topics related to chronic non-malignant pain and use of alternative therapies will be presented in this paper. The definition of chronic non-malignant pain, theories of pain, prevalence and meaning of chronic non-malignant pain to the individual, will be reviewed. Defining and differentiating alternative therapies from conventional medical therapies, in addition to exploring the origins of alternative therapies is necessary to clarify the differences between them. Finally, the discussion will conclude with an examination of the benefits, effectiveness, and prevalence of commonly used alternative therapies pertinent to the study question: Of those people experiencing chronic non-malignant pain, what is the extent and use of alternative therapies, and which of these therapies are most commonly used?

A computer search of the literature was conducted and focused on chronic non-malignant pain, alternative therapies, and traditional medicine. Search words included chronic disease, chronic pain, neoplasms, alternative medicine, medical

sciences, and traditional medicine. Theoretical, historical, popular, and research articles were reviewed, as well as clinical articles. The search was limited to English journals. The data bases explored were MEDLINE: 1985-1995, CINAHl: 1982-1995, EMBASE: 1994-1995, and PsycINFO: 1984-1995.

Chronic Non-malignant Pain

Merskey and Bogduk (1994) define chronic pain syndrome as "... a persisting pattern of pain that may have arisen from organic causes but which is now compounded by psychological and social problems in behavioral changes" (p. xiii). Melzack (1973) indicated that pain becomes chronic in nature when it persists and serves no useful function.

There is no predictable relationship between pain and injury, as different types of injuries require various lengths of time in which to heal. For example, the length of time necessary for lacerations with separated tissues to repair is considerably less than the healing process for peripheral nerves after trauma (Merskey & Bogduk, 1994). However, regardless of the type of injury, pain becomes chronic when the normal process of repair has ended.

In chronic pain syndromes such as rheumatoid arthritis and migraine headaches, normal healing does not occur. Pain can diminish, heal, and then recur. Medical treatments for pain control often give variable response rates. As a result, chronic pain is best understood as a persistent pain that is not generally amenable to specific remedies, or routine methods of pain control (Mersky & Bogduk, 1994).

Practitioners and researchers have not definitively classified chronic pain because

of differing types of pathologies, treatment responses, and the complexity of the subjective response to pain (Mersky & Bogduk, 1994). However, for therapeutic and research purposes Chronic non-malignant pain generally includes: 1) pain that persists beyond normal healing time for an acute injury or disease, generally greater than six months; 2) pain related to chronic musculoskeletal, visceral, and vascular disorders; 3) pain that recurs at intervals for months or years; and 4) pain that is not associated with malignant disease (Bonica, 1990; Corey, 1988; Mersky & Bogduk, 1994; Smith, Airey, & Salmond, 1990; Walding, 1991).

Theories of Chronic pain

The following discussion will focus on the most commonly accepted theories of chronic pain. The following theories, while recognizing the importance of the initial noxious sensory input, present different perspectives on the integration and interpretation of the painful stimulus.

Central Summation Theory

Bonica (1990) discusses the pathophysiology of chronic pain in addition to the psychological factors influencing this process. Emotional responses to pain such as fear and anxiety maintain the vicious circle of intense stimulation of sympathetic and somatic systems. Bonica (1990) elaborates on this theory calling these emotional responses "psychophysiologic mechanisms" (p. 188). These mechanisms are activated by emotional stress, which produce muscle spasms, local vasoconstriction, and visceral dysfunction. One or more of these triggers noxious peripheral nerve stimulation which results in pain, and consequently, more emotional distress. This, in turn, provokes more

psychophysiologic responses which maintain the circle of pain.

Gate Control Theory

Another commonly accepted theory of pain called the Gate Control theory was first identified by Melzack and Wall (1965). They propose that a gate control system modulates sensory input from the skin to the spinal cord and brain. Three systems interact to explain the pain phenomenon including: 1) the substantia gelatinosa of the spinal cord which contains the gate receiving peripheral nerve impulses from the skin; 2) dorsal column fibers within the spinal cord which control the stimuli to the cerebral cortex; and 3) the cerebrum which interprets and experiences the impulses as painful. Inhibitory neurotransmitters such as serotonin, endorphins, and dopamine help to close the 'gate', thereby mediating the sensation of pain (Melzack & Wall, 1982). This theory expands upon pain as purely sensory, by proposing that pain is a complex interaction of processes that involve physiological, psychological, and emotional factors.

Operant Conditioning Theory

Other theories of pain approach the subject from a behavioral and subjective orientation. Fordyce's (cited in Turk & Rudy, 1989) model is based upon classical learning theory which indicates that subjective experiences of pain cannot be measured or objectively evaluated. However, the behavioral aspects and the social and environmental factors influencing these behavioral manifestations can be. For example, if pain behaviors are supported by the family, friends, or health care providers, pain behaviors may continue in the absence of noxious stimuli. Therefore, operant conditioning strategies which de-emphasize pain behaviors and reward positive pain behaviors are reinforced.

Incidence of Chronic Non-Malignant pain

Chronic pain continues to be the most frequent cause of suffering and disability amoung industrialized countries (Bonica, 1990). Disability as a result of prolonged pain is described as pain-induced functional and psychological impairment, limiting work and social activities in the individual (Korff, Dworkin, & Le Resche, 1990). In Canada, the most physically disabling conditions for adults are chronically painful diseases of the musculoskeletal system including arthritis and rheumatism (Statistics Canada, 1986). The psychological limitations that chronic pain imposes on these individuals are not described in this study. A comprehensive national survey on the incidence, prevalence, and social and economic costs of chronic pain within the general Canadian population has not been done.

Bonica (1990) believes that most national epidemiological studies do not accurately reflect the general incidence of chronic pain because of a focus on specific chronic disease states. For example, recent statistics indicate that in Edmonton (pop. 840,000) 22% of the population (184,800) suffer from arthritis in some form. (Arthritis Society, 1991). This data reveals the incidence of a specific chronically painful disorder which affects only a certain segment of the population. Accurate national survey data is not generally collected on chronic non-malignant pain syndromes that are difficult to classify into diagnostic categories. Consequently, the prevalence of the many forms of chronic non-malignant pain is likely underestimated and poorly reported (Bonica, 1990).

In a recent study conducted by Birse (1994) in the greater Edmonton area, 44.3% of the general adult population were affected by chronic non-malignant pain. The most

common sites of pain involved the back, head, and neck. The response rate of females in this study was at a higher rate than exists in the population. However, certain chronically painful diseases such as rheumatoid arthritis do affect higher proportions of females as compared to men in the population (Arthritis Society, 1991). In this study, diseases such as arthritis may have been factors influencing the uneven response rate.

Other data from various sources suggest that between 25 and 30% of the population in the industrialized world suffer from chronic pain (Bonica, 1990, p. 182). In the United States, the National Institute of Health (NIH) has estimated that chronic pain is the third largest health problem affecting approximately 65 million people (NIH cited in Simon, 1989). Assuming that the incidence, prevalence, and psychological and physiological impact of chronic pain syndromes affect Canadians similarly, it is reasonable to extrapolate these statistics to the Canadian population. However, extrapolating these results must be done with caution as cultural differences in perceived severity of complaints combined with different health care, social welfare, and insurance systems may exist (Tulder, Koes, & Bouter, 1995).

The effects of chronic pain on the individual

The meaning of pain varies with each person's beliefs, attitudes, and expectations which are shaped by cultural values about disease and illness (Kleinman, Eisenberg, & Good, 1978; Taylor, 1988). It may also be shaped by the degree of pathology, coping abilities, family and social support systems, all of which are related to previous medical experiences and subjective pain perceptions (Bonica, 1990; Jensen, Turner, Romano & Karoly, 1991; Simon, 1989; Taylor, 1988). Meinhart and McCaffery (1983) indicate that

pain is always unpleasant, therefore it inherently becomes an emotional experience. Anger, depression, and a preoccupation with 'pain talk' may be displayed (Simon, 1989). These emotional elements become magnified in people who experience chronic pain (Bonica, 1990; Keefe & Williams, 1990; Simon, 1989; Walding, 1991).

As a result, all these elements become formidable barriers in assessing and providing effective, therapeutic interventions. Health care professionals must recognize that chronic pain is a complex behavioral response that may bear little resemblance to the original trauma (Corey, 1988; Taylor,1988).

Therapeutic interventions such as pharmacological control of chronic pain are traditionally combined with surgical interventions aimed at controlling pain as a "disease" (Corey, 1988; Christensen, 1993; Taylor, 1988; Turk & Rudy, 1989). Often these types of interventions fail because they consider the pathophysiological aspects of chronic pain and not the psychological and psychosocial dimensions (Bonica, 1990). Consequently, individuals may feel an inexorable decline awaits them into incompetence, dependence, and helplessness, as they experience unremitting bouts of pain (Kronenfield & Wasner, 1982). As the success of biomedical remedies becomes more remote, people may seek the help of numerous health care professionals, traditional healers, and unconventional therapies in an attempt to reduce their pain and gain control over their lives (Burckhardt, 1990; Christenson, 1993; Montbriand & Laing, 1991; Taylor, 1988).

Unconventional Therapies

At this juncture, it is important to address what it is that unconventional therapies or medicines offer the individual that conventional medicine does not. In order to fully

examine this issue, exploration of several aspects of unconventional therapies will be presented including definitions of alternative therapies and how they differ from conventional medical practices. The origins, purpose, and commonly used therapies will be discussed. Finally, the efficacy and increasing prevalence of alternative therapies will be examined.

Definitions of Alternative therapy

Medicine

In the medical literature, alternative medicine or therapies is defined as practices which do not conform to conventional or western medical standards (Aldridge, 1990; Boisset & Fitzcharles, 1994; Eisenberg et al., 1993; Murray & Rubel, 1992; Sutherland & Verhoef, 1994).

Alternative practices are not commonly rooted in the biomedical model (Aakster, 1986). They are characterized by heterogeniety of practice, a lack of common ideology, and little or no professional or legal status.

Nursing

The nursing literature does not consistently define what alternative therapies are. The focus appears to be on describing the various theories developed by nurses and exploring the therapies performed by nurses and other practitioners. Indeed, the review of the nursing literature revealed numerous unconventional methods used in all aspects of the management of chronic non-malignant pain. Various therapies included: therapeutic touch, imagery, acupressure, acupuncture, reflexology, relaxation, and massage (Owens & Ehrenreich, 1991; Howell, 1994; Russell, 1994; Smith et al., 1990; Stephens, 1993;

Wright, 1987). These therapies share similar themes related to balance of the mind, body, and spirit. Therapeutic interventions are directed at the manipulation of thoughts, and the alteration of energy fields or energy patterns.

Medical Sociology and Anthropology

Medical sociologists and anthropologists first examine alternative therapies by analyzing health care systems, patients, healers, and healing within a cultural context (Kleinman, 1981). Alternative therapies are generally accepted as practices that are not in conformity with the dominant group of medical practitioners (Aakster, 1986; Gevitz, 1988). Alternative therapies use a holistic approach in maintaining and promoting health and curing illness (Aakster, 1986).

Differences between conventional medicine and alternative therapies

Medical Perspective

The medical literature clearly indicates that alternative therapies are practices that are outside mainstream medical practices, are not widely taught in North American medical schools, and are heterogeneous in nature (Eisenberg et al., 1993; Murray & Rubel, 1992).

Social Science Perspective

Social scientists generally view alternative therapies as part of the popular and folk sector of the health care system (Kleinman, 1981). Conventional medicine follows accepted views of the scientific world and understanding of the physical universe (Buckman & Sabbagh, 1995). Gevitz (1988) further clarifies the differences between conventional and alternative therapies by indicating that alternative practices are

characterized by nonconformity with society's dominant group of medical practitioners beliefs and standards.

Origins of Alternative therapies

Despite growing scientific empiricism, alternative therapies flourished alongside conventional medicine until the turn of the twentieth century (Gevitz, 1988). This was because conventional medicine was comprised of an assortment of scientists, folk healers, faith healers, herbalists, and frauds (Buckman & Sabbagh, 1995). There was little scientific evidence to support many of the treatment modalities such as bloodletting, indiscriminate use of dangerous drugs such as emetics, narcotics, belladonna, and strychnine, and surgical procedures (Gevitz, 1988). In addition, conventional medicine had little political or legal power. Medical licensure was uncommon, and as a result varying levels of training and knowledge within the medical community was the norm.

It was not until the twentieth century that the tremendous strides in scientific research in the areas of pathophysiology, pharmacology, and chemistry dramatically pushed alternative therapies into the fringes of medical practice (Gevitz, 1988). Conventional medical practitioners now had effective, scientifically demonstrated therapies that produced dramatic patient outcomes (Buckman & Sabbagh, 1995). This approach affected pathology and disease, but did nothing for the psychosocial conditions requiring the help of a 'healer' (Aldridge, 1990; Buckman & Sabbagh, 1995; Gillick, 1985; Kleinman, 1981; Murray & Rubel, 1992).

The benefits of Alternative therapies

Murray and Rubel (1992) write that the reasons people choose alternative

therapies may be related to disappointment with the care provided, a perceived lack of interest or understanding of certain conditions on the part of the physician, and cultural groups that use traditional practices specific to their group. Other people are interested in alternative therapies because of the current popular interest in individual empowerment, self-control of health care, and healthier, more 'natural' lifestyles (Montbriand & Laing, 1991; Murray & Rubel, 1992).

As discussed previously, people who have chronic non-malignant pain are an especially vulnerable group (Christenson, 1993; Simon, 1989; Taylor, 1988; Walding, 1991). Many people within this group have tried alternative therapies as a way of coping with their disease as conventional medical interventions fail them (Montbriand & Laing, 1991). The traditional patient-healer relationship that alternative therapies offer the patient focuses on the complexity of the chronic pain phenomenon (Kleinman et al., 1978). Buckman (1995) writes that alternative therapies offer people hope, support, personal involvement, empathy, acceptance, and personal control over illness within the context of their disease.

Research on the efficacy of Alternative therapies

Imagery is an ancient healing technique (Achterberg cited in Stephens, 1993) that uses mental images to alter physiological processes and behaviors. McCaffery (1989) discusses imagery as a method of distraction that helps people become aware of how the pain experience can be manipulated and changed. Research indicates that imagery can be effective in reducing chronic pain (Fernandez & Turk, 1989; McCaffery, 1989; Moran cited in Owens & Ehrenreich, 1991).

Therapeutic touch, relaxation therapy, massage and spiritual healing are some of the other, commonly used alternative therapies that have had positive results in managing chronic pain (Heidt, 1990; Howell, 1994; Hyman, Feldman, & Harris, 1989; Soeken & Carson, 1987).

Recent meta-analyses point to the effectiveness of acupuncture in the treatment of chronic non-malignant pain (Bhatt-Sanders, 1985; Patel, Gutzwiller, Paccaud, & Marazzi, 1989; Ter Riet, Kleijmen & Knipschild, 1990). Though results indicate that the effect is somewhat limited, analysts such as Patel et al. (1989) and Ter Riet et al. (1990) state that this may be due to the generally poor quality of the studies.

Malone and Strube (1988) performed a meta-analysis on 109 published studies on the effectiveness of various nonmedical treatments for chronic pain. They observed that in general, the treatments were effective, and that they shared some common characteristics. These characteristics included a good relationship with an empathic health care provider, hope for positive daily living with pain, and identification of the physical and psychosocial aspects of pain.

Howell's (1994) grounded research study into the health care practices of women experiencing chronic pain found that the 'healthiest' women used a wide range of alternative pain management strategies to manage their pain. These women were active participants in their pain management and health care.

While some of the previously discussed alternative therapies have been well researched, others need additional research to determine their efficacy (Boisett & Fitzcharles, 1994; Walker, 1995). In addition, the effect of alternative therapies on

chronic non-malignant pain is dependent upon many factors including the motivation of the individual, the education and skill level of the practitioner, and the amount of social support and acceptance of these therapies (Owens & Ehrenreich, 1991; Smith et al., 1990). Also, some investigators claim that alternative therapies reduce pain because of the placebo and maturation effect (Bonica, 1990; Eadie, 1990; Jarvis, 1992). The wide variety of alternative therapies and the various ways in which their effectiveness is examined, makes substantiation of efficacy difficult.

Commonly used Alternative therapies

The use of alternative therapies varies widely throughout different parts of the world (Murray & Rubel, 1992). Alternative therapies as a growing movement has been evident in Europe over the past two decades (Aldridge, 1990). For example, the German health care system is structured to accommodate conventional or alternative practitioners (Aldridge, 1990). The type of practitioner choosen is decided by the patient. For example, homeopathic remedies are popular and accepted as part of normal, health care activities.

The interest in alternative therapies is also strong in France, England, and the Netherlands. Homeopathic and manipulative therapies are most frequently used (Shipley, Broster, Jenkins, Clover, & Williams, 1983; Visser, Peters, & Rasker, 1992).

In Canada, a survey done by the Canada Health Monitor (Berger, 1990) revealed that 20% of Canadians had used some form of alternative therapy in the six months before they were surveyed. The most popular alternative therapy was chiropractic services but there were strong regional differences. For example, alternative therapies were lowest in the Atlantic provinces.

Boisset and Fitzcharles (1994) examined the prevalence and most frequently used alternative therapies in rheumatology patients. They found that 66% of patients had utilized alternative therapies in the preceding twelve months, with the highest percentage of people using over the counter remedies followed by spiritual aids (prayer, relaxation, and meditation) and alternative practitioners. Over the counter remedies were defined as any products bought by the patient without a medical prescription, including vitamins, minerals, fish oils, herbal oils, rubbing creams, and herbal preparations.

Sutherland and Verhoef (1994) similarly studied the extent of alternative therapy use in a group of patients attending a gastroenterology clinic in Calgary, Alberta. The most commonly seen alternative practitioners (in descending order), were chiropractors, herbalists, homeopaths, and naturopaths.

Verhoef, Russell and Love (1994) found that the prevalence of alternative medicine in rural Alberta had increased since last studied in 1990, and that chiropractors were most commonly seen.

In a study conducted by Northcott and Bachynsky (1993), chiropractic, prescription medicines, nonprescription medicine, and alternative health care in Edmonton were studied. This study revealed that Edmontonians utilized both conventional and alternative health care modalities concurrently. They also concluded that utilization of nonprescription medicines, chiropractic, and other alternative therapies such as meditation, acupuncture, and imagery had increased since last studied in 1979.

In conclusion, the research evidence suggests that alternative therapies are on the rise in Canada, and that there are definite regional trends. In Alberta, chiropractic use

appears to be the most favored alternative therapy. However, the results of these studies must be viewed with caution as they may be reflective of specific types of therapies sought by particular groups, such as rheumatology and gastroenterology patients, and therefore cannot be generalized to the general population. Also, the higher incidence of chiropractic use may be related to the fact that in Alberta, chiropractic use is insured under the provincial health care plan, and that physicians frequently refer patients to chiropractors. Chiropractic is also under the jurisdiction of the Regulated Health Professions Act indicating that this alternative therapy has achieved a measure of mainstream acceptance (Walker, 1995). In addition, Verhoef et al. (1994) writes that chiropractors may be more physically accessible than other alternative practitioners.

However, some philosophic approaches adopted by Canadian chiropractors are outside the realm of mainstream medical beliefs and practices. For example, chiropractic treatment for ear infections, spinal scoliosis, and asthma is not supported by scientific evidence and commonly accepted medical therapy (Lowry, 1995).

Summary

Chronic non-malignant pain is a multifactorial syndrome with physiological, psychological, and emotional elements. Conventional medical therapies often fail, leaving the individual dissatisfied with the biomedical model. Desire for relief of pain and personal involvement in health and illness leads many individuals to look at alternate methods of care. Research suggests that many of these alternative therapies are effective, although clear evidence of how they work is not available. Recent research suggests that the use of alternative therapies is on the rise within the chronic non-malignant pain

population. Further study is warranted as: 1) government-directed decisions are currently being made within Alberta regarding the reallocation of diminishing health care resources; and 2) few Canadian studies have been done which examine the extent and use of alternative therapies in the chronic non-malignant pain population.

CHAPTER III

METHODS AND PROCEDURES

The design of this study consisted of a secondary analysis of survey data, specifically the National Population Health Survey (NPHS) conducted by Statistics Canada between 1994 - 1995. The NPHS is a cross-sectional survey designed to collect information about the health status of the Canadian population. This survey is part of a longitudinal data collection process that selects specific respondents every second year for follow-up (Statistics Canada, 1994-95).

The secondary analysis used a cross-sectional approach involving the SPSS statistical software package. Data collected by the NPHS relating to demographics, socio-economic and health status, behavioral risk factors, and use of health care services by Canadians with chronic non-malignant pain was analyzed. Specific interest was directed at chiropractic and alternative health care use within this chronic non-malignant pain subgroup. Alternative health care use in the NPHS referred to services offered outside the traditional health care system (Statistics Canada, 1994-95). For the purposes of this study, chiropractor services were included among alternative providers.

The Sample

The target population for the NPHS study were household residents aged 12 years or older who were residents in all provinces and territories. People living in Indian Reserves, Canadian Forces Bases, and remote areas were excluded. The institutional component of the NPHS, which surveyed long term residents of hospitals and residential care facilities, was not included in the secondary analysis.

In Quebec, the NPHS selected the sample from respondents participating in a previous health survey (1992-93) organized by Santé Quebec: the Enquête Sociale et de santé (ESS). This method of sampling selection was only used in Quebec because Santé Quebéc obtains longitudinal data which the respondents agreed to share with the NPHS, and the NPHS used ESS data to improve sample representativeness without screening out households. In addition, ESS used a sampling methodology similar to the Labour Force Survey (LFS) which was employed by the NPHS for obtaining samples from the rest of the provinces and territories. The LFS is a multi-purpose sampling methodology involving clustering of major urban centers, urban towns, and rural areas within each province. These three clusters within the provinces are further stratified by geography and socioeconomic characteristics. The sample of dwellings was obtained after dwelling lists were completed for all of the sample clusters. This sampling approach was modified to meet the guidelines and needs of the NPHS. For example, the NPHS was budgeted for a sample size of 19,600 households. It was determined that each province needed a minimum of 1200 households. These restrictions indicated a need for an allocation formula that balanced the reliability requirements at national and regional levels (Kish, 1988).[1] Within the provinces and territories the sample was distributed proportionately to the population size. However, additional provincial buy-ins and the use of a rejective method which corrected for under representation of persons from large households and over representation of persons coming from small households affected the provincial

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[1]Sample was allocated proportionately to $0.804W_h^2+(\frac{1}{12})^2$, where W_h is the 1991 Census proportion of households in province h, h+ 1...12.

allocations and cluster sampling sizes. As a result, modifications made to the LFS design made the NPHS sample of clusters a stratified, replicated sample where strata were groups of the original strata, and replicates were subsamples independently and identically distributed into additional clusters (Statistics Canada, 1995). This resulted in a final sample size of 26,430 households and an actual surveyed sample of 20,000 households. The final response rate was approximately 88% of households (Statistics Canada, 1996).

Methods and Instruments

Initial contacts were made in the sampled households by means of a personal interview by an experienced LFS interviewer with a randomly selected member of the household. This person gave basic information on all household members including demographic, socioeconomic, and limited health related information .The health related information included health care utilization, and chronic conditions on all household members. The non-proxy section of the interview was one hour in length and involved more extensive and indepth health related questions about the selected panel respondent. Information was in questionnaire format and gathered by computer assisted interviewing (CAI). This system facilitated the correct and efficient entry of information into the system and also enabled the questionnaire to be customized to the respondent.

The Questionnaire

Focus groups were held and field tests conducted to verify various aspects of the questionnaire content. The purpose of the focus groups were to monitor respondent reactions to sensitive questions, assess the quality of the questions, and monitor the time

needed to answer various sections within the questionnaire. Field tests were conducted in four of Statistics Canada's regional offices to observe respondents reactions, and to assess both response time and rates. In addition, functioning of the CAI laptop computer was also assessed.

If the interviewers were unsuccessful in establishing contact, or encountered individuals who refused to participate, a letter was sent from Statistics Canada regional office stressing the importance of the survey. This was followed by a second visit or telephone call from the interviewer. Attempts were made to arrange interviewing appointments at convenient times for the respondent. In instances where no one was at home, numerous call backs were made.

The NPHS collapsed or recombined existing variables from the questionnaire to create new variables to facilitate further data analysis. These derived variables were not calculated if any part of a question was not answered or not stated. The Appendix provides the details on those derived variables used in the secondary analysis.

Secondary Analysis

The secondary analysis was conducted in three stages. Descriptive statistics examined the various demographic, socio-economic and health status, behavioral risk factors, and use of health care services by Canadians who do not have cancer. Alternative health care and chiropractic use were also examined. The non-malignant population was derived by removing from the analysis those respondents in the survey who indicated that they had cancer.

There were two questions on the survey that asked respondents if they

experienced pain. These two questions asked the respondents to rate their pain from 1 (no pain), to escalating intervals rating pain severity and activity restriction related to pain. The numbers of respondents who did not have pain on both variables were identical. Consequently, a new variable called PAIN was created. This pain variable contained two elements; those respondents with pain and those without pain. Cross-tabulations and chi-square analysis were then conducted within the pain and no- pain population on the demographic variables of concern, alternative health care use, and health and lifestyle behaviors. When appropriate, analysis of variance (ANOVA) was undertaken to determine if there was a significant difference between the means of the pain and no-pain groups on the variables as described above. Pain was examined as an independent variable throughout various aspects of the analysis. Determining how people with pain used health care resources and experienced various lifestyle behavior was also done. Analysis examined the demographics and alternative therapy use by those people experiencing pain. Finally, logistic regression examined the relationship between specific demographic and health and lifestyle behaviors as predictors of alternative therapy use.

Procedures for establishing reliability and validity

Focus groups, field tests, and the use of the CAI computer helped to determine the appropriateness of the questionnaire structure and the efficiency of the computer program. All LFS interviewers were trained and under the supervision of supervision of senior interviewers who periodically monitored the interviewers and reviewed their completed documents. For the purposes of reducing non-sampling error, sampled dwellings were not replaced by other dwellings. In addition, questionnaires were

translated into Spanish, Portugese, Chinese, Punjabee, and Italian to aid in reducing the non-response rate and increasing participation within the survey by various cultural groups. Total non-response involved adjusting the weight of those households responding to the survey for those households which did not respond.

The NPHS sample design was not self-weighting. If proper weights are not used, the results of any data analysis cannot be generalized to the Canadian population aged 12 years and older that were surveyed (Statistics Canada, 1995). As a result, in the secondary analysis rescaling the weight variable provided by the NPHS was done to correct for sampling methodology. This allowed for statistical analysis based upon sample size to be adjusted for the population estimate.[2] The use of this formula corrected for the unequal probabilities of respondent selection.

Reliability and Validity of Psychological Health Scales

In the secondary analysis, several derived variables, particularly those pertaining to assessment of psychological health were based upon commonly used and extensively tested instruments. For example, the self-esteem and mastery indexes are based upon the scales developed by Rosenberg (1969), and Pearlin and Schooler (1978). The mental health distress and depression distress scales are based upon a subset of items from the Composite International Diagnostic Review (CIDI). Since validity and reliability of the tools used to measure psychological well-being is important to the credibility of the study

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[2]Original weight variable x $\left(\frac{SampleSize}{PopulationEstimate}\right)$, where sample size = 17,626 and population estimate = 23,948,605.

findings, the following discussion examines these issues in relation to the self-esteem, mastery, and sense of coherence scales. Scores on the depression, mental health distress, general stress, and social support scales are examined last.

Reliability and Validity of Psychological Health Scales

Scores on the self-esteem index are based upon items from the self-esteem Rosenberg scale (1965). Rosenberg's self-esteem scale has been widely used and researched extensively. Research suggests that the scale is internally consistent with positive correlation with scores on other self-esteem measures (Demo, 1985; Eppinger & Lambert, 1983; Orme, 1986; Savin-Williams & Jaquish, 1981). Rosenberg (1979) noted a two-week test-retest reliability of .88 and Fleming and Courtney (1984) determined a coefficient alpha of .88 suggesting good item consistency. O'Brien (1985) compared the Rosenberg and Eagly (1967) self-esteem scales by conducting a factor analysis. The Rosenberg scale showed more discriminate validity. More recently, Shevlin, Bunting, and Lewis (1995) conducted a factor analysis which confirmed the unidimensional nature of the scale.

The mastery index is based upon the work of Pearlin and Schooler (1978) which measures the extent to which individuals feel that they have control over forces affecting their lives. Pearlin and Schooler (1978) developed standardized questions about life-strains and subjected them to a factor analysis which supported the validity of the items. Further studies (Pearlin, Menaghan, Lieberman & Mullen, 1981; Turner & Noh, 1988) determined that the instrument had a high reliability coefficient of .77 (Cronbach's alpha). Marshall and Lang (1990) further examined the validity of the structure of the

self-mastery scale by performing a confirmatory factor analysis on the items revealing highly significant factor loadings.

Antonovksy's (1979) sense of coherence scale was developed to assess the extent to which individuals perceive events as manageable and meaningful. This scale has been studied extensively and research indicates that it has a high degree of reliability and consistency. Rumbaut and Dana (1992) studied the reliability of the questionnaire by computing a Cronbach's alpha on several normative studies. The scores ranged from .84 to .93 which represents a reasonable degree of internal consistency and reliability of the instrument. Other studies have attempted to establish the validity of the questionnaire. Rumbaut (1983) administered the questionnaire to a sample of 336 undergraduate students. The alphas of two scales were .903 and .881. Data on the validity of the scale have also been presented by Dana (1985). These findings indicated that the questionnaire was significantly related in a positive direction to all health measures and significantly but negatively related to all illness measures.

The mental health distress and depression scales used in this survey are composed of a subset of items from the Composite International Diagnostic Interview (CIDI) and further refined by Kessler et al., (1994). The CIDI is a diagnostic instrument designed to produce diagnoses based upon the definitions and criteria of the Internal Classification of Diseases (ICD-10). The ICD-10 is based upon a comprehensive classification system used and accepted internationally to provide a framework within which to group various medical conditions.

The NPHS does not indicate the theoretical framework underlying the chronic

stress or social support indexes. The chronic stress index is composed of stressors related to activity overload, financial difficulties, and relationship problems. The social support contains items reflecting upon whether respondents have someone they can confide and count on, and someone who supports and loves them. How these items were derived is unclear, therefore assessing reliability and validity of these scales is not possible.

Protection of human rights

The public use data files are different from the NPHS master files held by Statistics Canada. This is done to protect the anonymity of the surveyed respondents. To illustrate, the questionnaire asked respondents to indicate any alternative health care provider seen or spoken to in the previous 12 months. An extensive list was provided. The data from this question was not available on the public use data file because of the relatively small number of responses. As a result, only limited information revealing the respondents gender combined with some of the larger response rates were available to the author. The small response numbers were suppressed for confidentiality reasons (Daniel Dekoker, personal communication, September 16, 1996).

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The secondary analysis involved the examination of data relating to demographics, health and lifestyle factors, mental health perceptions, and use of health care services within the non-malignant population. Specific analysis was directed at alternative health care use within this population and its subgroup of respondents experiencing chronic non-malignant pain.

Characteristics of the sample

The non-malignant population was obtained by removing those respondents who indicated that they had cancer in the chronic health conditions section of the questionnaire. This reduced the sample size by 2%. Table 1 presents the characteristics of the non-malignant respondents (gender, age, marital status, educational level, and household income). Females and males are almost equally represented. Respondents aged 25-39 years composed 31% of the total percent surveyed. About two thirds of the respondents were married, or had a common-law or partner relationship. A sizable proportion of the respondents (33%) had little or no education or had some secondary education. Sixty- seven percent(67%) had completed high school, its equivalent, or more. It should be noted that 5% of respondents did not state their household income.

Question # 1: Prevalence of chronic non-malignant pain and demographic characteristics

An analysis of the characteristics of the pain and no-pain population within the sample was conducted next. This was done to answer the research question

Table 1
Respondent Characteristics for Non-Malignant sample

Characteristics	Sample
Gender (%)	
Females	51% (8761)
Males	49% (8570)
Age (%)	
(12-24)	22% (3755)
(25-39)	31% (5368)
(40-54)	24% (4189)
(55-69)	15% (2520)
70 and older	9% (1499)
Marital Status (%)	
Married/Common-law/Partner	59% (10173)
Single	30% (5112)
Widowed/Divorced/Separated	12% (2044)
Missing	0% (3)
Education (%)	
None/Elementary/Secondary	33% (5773)
Secondary Grad/some Trade School	24% (4103)
Some Com. College/Univ/Tr. Sch Diploma	23% (3949)
ComCollegeDip/Bach/Master/Phd/MD	20% (3479)
Missing	.2% (26)
Household Income in dollars (%)	
< 14,999	13% (2134)
15,000-29,000	21% (3513)
30,000-49,000	28% (4607)
> 50,000	38% (6254)
Missing	5% (825)

Note. The numbers in parenthesis represent the frequencies.

about the prevalence of chronic non-malignant pain, and the demographic differences between the pain and no-pain groups.

Examination of the prevalence of pain in the sample is illustrated on Table 2. Seventeen percent of the respondents experienced non-malignant pain.

Demographics

The characteristics of the pain and no-pain groups by gender, age, marital status, income, and education are presented in Table 3. Significant differences were found with chi-square analysis for gender, age, marital status, education, and income. Women experienced pain more (19%) than did men (14%). The percentage of pain increases within all age categories with the lowest percentage of pain in the 12-24 age group (9%) and the highest percentage within the those people aged 70 years and older (32%).

Respondents who were widowed, divorced, or separated experienced more pain (26%) than did the other categories of respondents, particularly those who were either married, or had a common-law or partner relationship. Regarding education and income, the highest percentages of pain reported were found in the lowest level of education and two lowest income categories. Twenty five percent of respondents with pain reported their income as being less than $15,000. People in the >$80,000 category experienced the least amount of pain (10%). Similar patterns in the education category indicated that 20% of those with no schooling had pain as compared to those who had completed college or various university degrees (12%). In both the education and income categories, the percentage of respondents reporting pain tended to diminish as education and income levels increased. Note the 5% of the respondents failed to report their income.

Table 2

Characteristics of Respondents: Pain and No-Pain Groups

Group	(%)	Frequencies
Pain	(17)	2875
No Pain	(83)	14395
Missing	(.5)	79
Total	(100)	17332

Table 3
Cross-tabulation of Pain and No Pain Groups by Gender, Age, Marital Status, Education, and Income

Characteristic	PAIN		NO-PAIN			
Gender	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Male	1191	(14)	7341	(86)	8532	(100)
Female	1666	(19)	7055	(81)	8721	(100)
Total	2857	(17)	14395	(83)	17253	(100)

Chi-square = 82, df =1, p<.05

	PAIN		NO-PAIN			
Age	**f**	**%)**	**f**	**(%)**	**Total**	**(%)**
12-24	339	(9)	3411	(91)	3750	(100)
25-39	677	(13)	4672	(87)	5349	(100)
40-54	759	(18)	3407	(82)	4167	(100)
55-69	599	(24)	1900	(76)	2498	(100)
>70	483	(32)	1006	(68)	1489	(100)
Total	2857	(17)	14395	(83)	17253	(100)

Chi-square = 591, df =4, p <.05

	PAIN		NO-PAIN			
Marital Status	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Mar/CL/Partner	1814	(18)	8313	(82)	10127	(100)
Single	518	(10)	4574	(90)	5092	(100)
Wid/Div/Sep	525	(26)	1506	(74)	2031	(100)
Total	2857	(17)	14393	(83)	17250	(100)

Chi-square = 291, df = 2, p<.05

Table 3 (Continued)
Cross-tabulation of Pain and No Pain Groups by Gender, Age, Marital Status, Education, and Income

	PAIN		NO-PAIN			
Education	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
None/someSec	1169	(20)	4576	(80)	5745	(100)
HS/Tr. School	656	(16)	3423	(84)	4079	(100)
Some coll/univ	605	(15)	3333	(85)	3938	(100)
Dip/adv.degree	421	(12)	3045	(88)	3466	(100)
Total	2851	(17)	14377	(84)	17228	(100)

Chi-square = 113, df = 3, p< .05

	PAIN		NO-PAIN			
Income	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
<9000	204	(24)	649	(76)	853	(100)
10,000-14,999	309	(25)	953	(76)	1262	(100)
15,000-19,999	285	(23)	949	(77)	1233	(100)
20,000-29,999	480	(21)	1781	(79)	2261	(100)
30,000-39,999	379	(16)	1986	(84)	2365	(100)
40,000-49,999	335	(15)	1888	(85)	2223	(100)
50,000-59,999	275	(14)	1691	(86)	1966	(100)
60,000-69,000	247	(12)	1875	(88)	2122	(100)
>70,000	217	(10)	1932	(90)	2149	(100)
Total	2731	(17)	13705	(83)	16436	(100)

Chi-square = 278, df = 8, p<.05

Question # 2: Main research question: Alternative Therapy use in Pain and No-Pain Groups

To answer the research question which asks if people with chronic non-malignant pain use alternative therapies differently than those without pain, the no pain group was compared to the chronic non-malignant pain group. This served to answer the main research question posed in the study.

Alternative therapy use

Of the 17,332 individuals surveyed, 11% had used chiropractic services and 5% had used alternative health care services in the past year (Table 4). The 5% of respondents who responded positively to using an alternative health care provider in the past year were then asked what type of alternative provider had been used (massage therapist, acupuncturist, homeo/naturopath, or "other"). Of the 5% (863 people) who had used one of the above alternative health care providers, the use of a massage therapist elicited the greatest response (47%).

Public information regarding the subcategories listed under "other" alternative providers is limited due to issues of reliability and confidentiality. The data available was obtained by special request from Statistics Canada. The largest groups within the "other" categories in descending order included the use of a herbalist, reflexologist, spiritual/religious healer, relaxation therapist, and self-help group. It should be noted that these are small numbers and they are representative of the general sample including the malignant pain group excluded elsewhere.

In order to fully answer the question about how people with and without pain in this sample used alternative therapies, adjunctive use of alternative providers (i.e., use of

Table 4
Characteristics of Respondents use of Alternative Health Care Providers during past year

Characteristics	Yes		No		
	%	(f)	%	(f)	Total
A. Chiropractor	11	(1840)	89	(15483)	100%
B. Alternative Health Care Provider	5	(863)	95	(16466)	100%

Alternative Health Care Subgroups (users of Alternative Health Care)

	Yes		No		
	%	(f)	%	(f)	Total
1. Massage	47	(409)	53	(453)	100%
2. Acupuncture	17	(148)	83	(715)	100%
3. Homeo/naturopath	29	(252)	71	(610)	100%
4. Other	21	(179)	79	(683)	100%

Note. The numbers in parentheses represent frequencies.

more than one alternative health care provider) within the sample (excluding the malignant pain group) was examined. Chiropractic use was included with the various alternative health care providers. The results are presented in Table 5.

There are percentage differences regarding chiropractor use in those respondents who used alternative health care providers and the subcategories homeo/naturopath and "other". Fifteen percent of respondents using chiropractors had also visited some type of alternative health care provider at least once over the past year compared to 4% of persons who had not visited a chiropractor. Of the respondents who had made at least one chiropractor visit, 35% of them had also seen homeopath or naturopath. Although 53% of people who had used a massage therapist had also visited a chiropractor over the past year, chi-square tests indicated that the two variables were independent of each other and therefore not statistically significant (p=.05). Consequently, these results are not presented in the table.

Within the subcategories of alternative health care providers, 10% of respondents who had visited a massage therapist over the past year had also visited a homeopath or naturopath (Table 5, p.39). Smaller percentages of use (8% acupuncture and massage, "other" and acupuncture) were observed and statistically significant at the $p<.05$ level.

Two items are of note in this particular analysis. First, the high chi-squares in the categories "alternative health care providers and chiropractor use (chi-square=422)", and "homeo/naturopath and massage therapist use (chi-square=140)". A large computed value of chi-square occurs when there is a substantial difference between observed and expected frequencies. In this analysis, this suggests that people who use one alternative

Table 5

Respondents Adjunctive use of Alternative Health Care Providers during past year

ALTERNATIVE HEALTH CARE PROVIDER USE

	YES		NO			
Chiropractor use	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
No	590	(4)	14891	(96)	**15481**	(100)
Yes	273	**(15)**	1567	(85)	**1840**	(100)
Total	863	(5)	16459	(95)	**17321**	(100)

Chi-square = 422, df = 1, p<.05

HOMEO/NATUROPATH (For users of Alternative Health Care only)

	YES		NO			
Chiropractor	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
No	156	(26)	433	(74)	**590**	(100)
Yes	96	**(35)**	177	(65)	**273**	(100)
Total	252	(29)	610	(71)	**863**	(100)

Chi-square = 7, df = 1, p<.05

OTHER (For users of Alternative Health Care only)

	YES		NO			
Chiropractor	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
No	135	(23)	455	(77)	**590**	(100)
Yes	44	**(16)**	229	(84)	**273**	(100)
Total	179	(21)	683	(79)	**863**	(100)

Chi-square = 5, df = 1, p<.05

Table 5 (Continued)
Respondents Adjunctive use of Alternative Health Care Providers during past year

HOMEO/NATUROPATH (For users of Alternative Health Care only)

	YES		NO			
Massage	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes	41	**(10)**	369	(90)	**409**	(100)
No	212	(47)	242	(53)	**453**	(100)
Total	252	(29)	610	(71)	**863**	(100)

Chi-square = 140, df = 1, p<.05

OTHER (For users of Alternative Health Care only)

	YES		NO			
Massage	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes	41	**(10)**	369	(90)	**409**	(100)
No	139	(31)	315	(69)	**453**	(100)
Total	179	(21)	683	(79)	**863**	(100)

Chi-square = 56, df = 1, p<.05

ACUPUNCTURE (For users of Alternative Health Care only)

	YES		NO			
Massage	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes						
(%)	31	**(8)**	378	(92)	**409**	(100)
No						
(%)	117	(26)	337	(74)	**453**	(100)
Total	148	(17)	715	(83)	**863**	(100)

Chi-square = 50, df = 1, p<.05

Table 5 (Continued)
Respondents Adjunctive use of Alternative Health Care Providers during past year

OTHER (For users of Alternative Health Care only)

	YES		NO			
Acupuncture	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
No	167	(23)	547	(77)	**715**	(100)
Yes	12	**(8)**	136	(92)	**148**	(100)
Total	179	(21)	683	(79)	**863**	(100)

Chi-square = 17, df = 1, p<.05

HOMEO/NATUROPATHY (For users of Alternative Health Care only)

	YES		NO			
Acupuncture	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
No	242	(34)	473	(66)	**715**	(100)
Yes	11	**(7)**	137	(93)	**148**	(100)
Total	252	(29)	610	(71)	**863**	(100)

Chi-square = 42, df = 1, p<.05

OTHER (For users of Alternative Health Care only)

	YES		NO			
Homeo/Naturo	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
No	161	(26)	450	(74)	**610**	(100)
Yes	19	**(7)**	234	(93)	**252**	(100)
Total	179	(21)	683	(79)	**863**	(100)

Chi-square = 39, df = 1, p<.05

therapy tend to concurrently use another type of alternative therapy.

Main Question: Alternative therapy use within the Pain group

An analysis of alternative therapy use by those respondents experiencing non-malignant pain was conducted next. The following discussion describes the extent and use of those alternative therapies most commonly used. Cross-tabulation and chi-square analysis was performed on the pain and no-pain groups within the sample. The statistically significant results of this analysis are presented in Table 6. People with pain were more likely to visit a chiropractor (17%) than an alternative health care provider (8%). For users of alternative health care only, 54% of people with pain visited a massage therapist compared to 45% of people not in pain. Of those in pain, 24% visited an acupuncturist over the past year compared to 14% of people not in pain. These results indicate that people with pain use chiropractic and alternative therapies more frequently than those who do not have pain.

Question # 3: Demographic characteristics related to Alternative Therapy use

The next analysis was conducted in order to answer the research question which asked if gender, age, level of education, and ethnic origin was related to alternative therapy use. Cross-tabulation and chi-square analysis was performed. Table 7 presents the data that is statistically significant.

Gender

With regards to gender, statistically significant differences were found in the alternative therapy and homeo/naturopath groups only. Overall, females used alternative therapies more than men (females: 7%, males: 3%). For users of alternative health care

Table 6
Pain and No-Pain Groups by Alternative Therapy Use

CHIROPRACTOR USE

	YES		NO			
PAIN	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes	478	**(17)**	2378	(83)	**2856**	(100)
No	1354	(9)	13037	(91)	**14390**	(100)
Total	1831	(11)	15415	(89)	**17246**	(100)

Chi-square = 135, df = 1, p<.05

ALTERNATIVE HEALTH CARE PROVIDER

	YES		NO			
PAIN	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes	226	**(8)**	2631	(92)	**2857**	(100)
No	632	(4)	13761	(95)	**14393**	(100)
Total	858	(5)	16392	(95)	**17250**	(100)

Chi-square = 62, df = 1, p<.05

MASSAGE (For users of Alternative Health Care only)

	YES		NO			
PAIN	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes	122	**(54)**	104	(46)	**226**	(100)
No	286	(45)	346	(55)	**632**	(100)
Total	408	(48)	450	(52)	**858**	(100)

Chi-square = 5, df = 1, p<.05

ACUPUNCTURE (For users of Alternative Health Care only)

	YES		NO			
PAIN	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Yes	55	**(24)**	171	(76)	**226**	(100)
No	91	(14)	541	(86)	**632**	(100)
Total	146	(17)	712	(83)	**858**	(100)

Chi-square = 12, df = 1, p<.05

Table 7
Alternative Provider use by Gender, Age, Income, Education, and Place of Birth

ALTERNATIVE HEALTH CARE PROVIDER

	YES		NO			
GENDER	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Male	282	(3)	8287	(97)	**8569**	(100)
Female	581	(7)	8179	(93)	**8760**	(100)
Total	863	(5)	16466	(95)	**17329**	(100)

Chi-square = 102, df = 1, p<.05

HOMEO/NATUROPATH (For users of Alternative Health Care only)

	YES		NO			
GENDER	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Male	64	(23)	218	(77)	**282**	(100)
Female	189	(33)	392	(67)	**581**	(100)
Total	252	(29)	610	(71)	**863**	(100)

Chi-square = 9, df = 1, p<.05

ALTERNATIVE HEALTH CARE PROVIDER

	YES		NO			
AGE	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
12-25	85	(2)	3668	(98)	**3753**	(100)
25-39	376	(7)	4992	(93)	**5368**	(100)
40-54	250	(6)	3939	(94)	**4188**	(100)
55-69	110	(4)	2410	(96)	**2520**	(100)
>70	42	(3)	1457	(97)	**1499**	(100)
Total	863		16466	(95)	**17329**	

Chi-square = 131, df = 4, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of Birth

MASSAGE (For users of Alternative Health Care only)

	YES		NO			
AGE	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
12-24	40	(47)	45	(53)	85	(100)
25-39	207	(55)	170	(45)	376	(100)
40-54	111	(44)	139	(56)	250	(100)
55-69	38	(35)	72	(65)	110	(100)
>70	14	(33)	28	(67)	42	(100)
Total	409	(47)	453	(53)	863	(100)

Chi-square = 20, df = 4, p<.05

ACUPUNCTURE (For users of Alternative Health Care only)

	YES		NO			
AGE	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
12-24	14	(17)	71	(83)	85	(100)
25-39	41	(11)	335	(89)	376	(100)
40-54	44	(18)	206	(82)	250	(100)
55-69	32	(29)	78	(71)	110	(100)
>70	17	(40)	25	(60)	42	(100)
Total	148	(17)	715	(83)	863	(100)

Chi-square = 36, df = 4, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of Birth

OTHER (For users of Alternative Health Care only)

	YES		NO			
AGE	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
12-24	15	(18)	70	(82)	**85**	(100)
25-39	78	(21)	298	(79)	**376**	(100)
40-54	68	(27)	181	(73)	**250**	(100)
55-69	17	(15)	93	(85)	**110**	(100)
>70	1	(3)	41	(97)	**42**	(100)
Total	179	(21)	683	(79)	**863**	(100)

Chi-square = 17, df =4, p<.05

CHIROPRACTOR

	YES		NO			
AGE	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
12-24	262	(7)	3498	(93)	**3751**	(100)
25-39	600	(11)	4768	(89)	**5368**	(100)
40-54	608	(15)	3579	(85)	**4188**	(100)
55-69	259	(10)	2259	(90)	**2518**	(100)
>70	111	(7)	1388	(93)	**1499**	(100)
Total	1840	(11)	15483	(89)	**17323**	(100)

Chi-square = 137, df = 4, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of Birth

	ALTERNATIVE HEALTH CARE PROVIDER					
	YES				NO	
INCOME	f	(%)	f	(%)	Total	(%)
<9000	42	(5)	822	(95)	864	(100)
10,000-14,999	47	(4)	1222	(96)	1269	(100)
15,000-19,999	40	(3)	1202	(97)	1243	(100)
20,000-29,999	124	(5)	2145	(95)	2269	(100)
30,000-39,999	100	(4)	2280	(96)	2380	(100)
40,000-49,999	107	(5)	2119	(95)	2226	(100)
50,000-59,999	115	(6)	1854	(94)	1969	(100)
60,000-69,999	119	(6)	2010	(94)	2130	(100)
>70,000	128	(6)	2026	(94)	2155	(100)
Total	823	(5)	15681	(95)	16504	(100)

Chi-square = 26, df = 8, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of Birth

	MASSAGE (For users of Alternative Health Care only)					
	YES		NO			
INCOME	f	(%)	f	(%)	Total	(%)
<9000	19	(45)	23	(55)	42	(100)
10,000-14,999	16	(34)	31	(66)	47	(100)
15,000-15,999	13	(32)	27	(68)	40	(100)
20,000-29,999	48	(39)	76	(61)	124	(100)
30,000-39,999	49	(49)	51	(51)	100	(100)
40,000-49,999	49	(46)	58	(54)	107	(100)
50,000-59,999	64	(56)	51	(44)	115	(100)
60,000-69,999	61	(51)	59	(49)	119	(100)
>70,000	76	(59)	52	(41)	128	(100)
Total	394	(48)	428	(52)	823	(100)

Chi-square = 22, df = 8, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of birth

HOMEO/NATUROPATH (For users of Alternative Health Care only)

	YES		NO			
INCOME	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
<9000	9	(21)	33	(79)	42	(100)
10,000-14,999	18	(38)	29	(62)	47	(100)
15,000-19,999	16	(39)	25	(61)	25	(100)
20,000-29,999	50	(40)	74	(60)	74	(100)
30,000-39,999	33	(34)	66	(66)	66	(100)
40,000-49,999	25	(24)	82	(76)	82	(100)
5,000-59,999	35	(31)	80	(69)	80	(100)
60,000-69,999	29	(25)	90	(75)	90	(100)
>70,000	24	(19)	104	(81)	104	(100)
Total	240	(21)	583	(71)	823	(100)

Chi-square = 23, df = 8, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of birth

	CHIROPRACTOR					
	YES		NO			
INCOME	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
<9000	69	**(8)**	795	(92)	**864**	(100)
10,000-14,999	90	**(7)**	1180	(93)	**1270**	(100)
15,000-19,999	105	**(8)**	1138	(92)	**1243**	(100)
20,000-29,999	227	**(10)**	2041	(90)	**2269**	(100)
30,000-39,999	269	**(11)**	2111	(89)	**2381**	(100)
40,000-49,999	258	**(12)**	258	(88)	**258**	(100)
50,000-59,999	214	**(11)**	214	(89)	**214**	(100)
60,000-69,999	263	**(12)**	263	(88)	**263**	(100)
>70,000	271	**(13)**	271	(87)	**271**	(100)
Total	1767	**(11)**	14733	(89)	**16500**	(100)

Chi-square = 49, df = 8, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of birth

ALTERNATIVE HEALTH CARE PROVIDER

	YES		NO			
EDUCATION	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
None/some Sec	162	(3)	5612	(97)	5773	(100)
HS/Trade School	176	(4)	3926	(96)	4101	(100)
Some college/univ	245	(6)	3705	(94)	3949	(100)
Dip/adv. degrees	278	(8)	3201	(92)	3479	(100)
Total	860	(5)	16443	(95)	17303	(100)

Chi-square = 142, df = 3, p<.05

ACUPUNCTURE (For Alternative Health Care users only)

	YES		NO			
EDUCATION	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
None/some Sec	43	(26)	119	(74)	162	(100)
HS/Trade School	30	(17)	146	(83)	176	(100)
Some college/univ	30	(12)	214	(88)	245	(100)
Dip/adv. degrees	45	(16)	233	(84)	278	(100)
Total	148	(17)	712	(83)	860	(100)

Chi-square = 13, df = 3, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of birth

HOMEO/NATUROPATH (For users of Alternative Health Care only)

	YES		NO			
EDUCATION	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
None/some Sec	34	(21)	128	(79)	**162**	(100)
HS/Trade School	54	(31)	122	(69)	**176**	(100)
Some college/univ	62	(26)	182	(74)	**245**	(100)
Dip/adv. degrees	100	(36)	178	(64)	**278**	(100)
Total	250	(29)	610	(71)	**860**	(100)

Chi-square = 13, df = 3, p<.05

CHIROPRACTOR

	YES		NO			
EDUCATION	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
None/some Sec	456	(8)	5315	(92)	**5771**	(100)
HS/Trade School	498	(12)	3604	(88)	**4102**	(100)
Some college/univ	452	(11)	3497	(89)	**2349**	(100)
Dip/adv.degrees	433	(13)	3043	(87)	**3476**	(100)
Total	1839	(11)	15460	(89)	**17299**	(100)

Chi-square = 70, df = 3, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of birth

ALTERNATIVE HEALTH CARE PROVIDER

	YES		NO			
PLACE OF BIRTH	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Canada	748	(5)	13178	(95)	**13962**	(100)
U.S./Mexico	13	(6)	216	(94)	**228**	(100)
S.Am/Africa	6	(1)	554	(99)	**560**	(100)
Europe/Australia	61	(4)	1587	(96)	**1649**	(100)
Asia	32	(4)	837	(96)	**869**	(100)
Total	860		16372	(95)	**17232**	(100)

Chi-square = 31, df = 4, p<.05

ACUPUNCTURE (For users of Alternative Health Care only)

	YES		NO			
PLACE OF BIRTH	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Canada	126	(17)	622	(83)	**748**	(100)
U.S./Mexico	1	(11)	11	(89)	**13**	(100)
S.Am/Africa	0	(0)	6	(100)	**6**	(100)
Europe/Australia	7	(12)	54	(88)	**61**	(100)
Asia	13	(41)	19	(59)	**32**	(100)
Total	148	(17)	712	(83)	**860**	(100)

Chi-square = 15, df = 4, p<.05

Table 7 (Continued)
Alternative Provider Use by Gender, Age, Income, Education, and Place of birth

HOMEO/NATUROPATH (For users of Alternative Health Care only)

	YES		NO			
PLACE OF BIRTH	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Canada	230	(31)	518	(69)	748	(100)
U.S./Mexico	2	(18)	10	(82)	13	(100)
S.Am/Africa	4	(61)	2	(39)	6	(100)
Europe/Australia	13	(21)	48	(79)	61	(100)
Asia	3	(8)	29	(92)	32	(100)
Total	252	(29)	608	(71)	860	(100)

Chi-square = 13, df = 4, p<.05

OTHER (For users of Alternative Health Care only)

	YES		NO			
PLACE OF BIRTH	**f**	**(%)**	**f**	**(%)**	**Total**	**(%)**
Canada	141	(19)	607	(81)	748	(100)
U.S./Mexico	4	(30)	9	(70)	13	(100)
S.Am/Africa	1	(22)	5	(78)	6	(100)
Europe/Australia	20	(33)	41	(67)	61	(100)
Asia	10	(33)	21	(67)	32	(100)
Total	177	(21)	683	(79)	860	(100)

Chi-square = 11, df = 4, p<.05

Table 7 (Continued)
Alternative Provider use by Gender, Age, Income, Education, and Place of birth

	CHIROPRACTOR					
	YES		NO			
PLACE OF BIRTH	f	(%)	f	(%)	Total	(%)
Canad	1576	(11)	12345	(88)	13920	(100)
U.S./Mexico	32	(14)	196	(86)	228	(100)
S.Am/Africa	39	(7)	521	(93)	560	(100)
Europe/Australia	149	(9)	1500	(91)	1649	(100)
Asia	45	(5)	824	(95)	869	(100)
Total	1840	(11)	15387	(89)	17226	(100)

Chi-square = 50, df = 4, p<.05

only, 33% of females compared to 23% of males saw either a homeopath or a naturopath in the past year.

Age

With regards to age, analysis revealed statistically significant results for alternative health care use generally, and its subgroups massage, acupuncture, and "other"(Table 7, pp. 44-46). Analysis of the chiropractor category also was statistically significant. Alternative health provider use was highest in the 25-29 age range with use tapering off as age increased. For users of alternative health care, massage therapy had the overall highest percentages of use as compared to acupuncture and "other". Use of massage was highest for people aged 25-39 years and declined with increased age. Use of acupuncture tended to increase with age. Respondents aged 70 years and older had a much larger percentage of acupuncture use (40%) as compared to the next youngest category 55-69 (29%). Within the chiropractor category, the highest percentage of use is in the 40-54 age category (15%) with the smallest percentages of use found in the 12-24 and >70 age categories.

Income

Analysis of income indicated statistical significance in the alternative health care provider category and its subgroups massage and homeo/naturopath groups (Table 7, p.47-49). Chiropractor use was also statistically significant (Table 7, p.50).The percent of use of an alternative health care provider was highest in those respondents earning over $60,000 (6%). Use of a massage therapist was also higher in the higher income categories. In the homeo/naturopath category results are different, as percentages of use

are highest in the lowest income categories and then decline after the $40,000 category. Within the chiropractor category the highest percentage of use corresponds to the highest income category (13%), and use tends to increase with income.

Education

Chi-square analysis determined significant differences for education on use of an alternative health care provider, the subgroups acupuncture, homeo/naturopath, and chiropractor use (Table 7, pp. 51-52). In general, the higher the education, the higher the use of an alternative health care provider and chiropractor. The acupuncture subcategory of alternative health care provider revealed a somewhat opposite effect with the highest percentages of use in respondents whose educational level had not proceeded beyond trade school education. Highest users of homeo/naturopaths were those with the highest level of education (36%). There was also a high percentage of chiropractor use evident in the high school and trade school categories (12%).

Ethnic origin

Analysis of place of birth indicated statistical significance for the relationships with alternative health care use and its subgroups acupuncture, homeo/naturopath, and "other", and also for chiropractor use (Table 7, pp. 53-54). The highest users of alternative health care providers were born in the United States or Mexico (6%), with Canada as a place of birth having (5%) use. People of Asian origin used acupuncture dramatically more (41%) than all others with Canadian- born respondents reporting 17% use. Another dramatic difference in use was within the homeo/naturopath category with respondents of South American or African origin having 61% use (p. 54). In the "other"

category, respondents born in Europe, Australia, or Asia were tied at 33% for use of other types of alternative health care providers.

It should be noted that within the subcategories of alternative health care provider use (massage, acupuncture, homeo/naturopathy, and "other"), the numbers are often small which suggests that the data has questionable reliability.

Question # 4: Regional differences in Alternative Therapy use

In order the answer the research question which asked if there are regional differences related to alternative therapy use, cross-tabulation and chi-square analysis was conducted. Table 8 presents the statistically significant chi-square analysis on province regarding alternative health care provider and chiropractor use. Analysis of the subcategories within the alternative health care provider category by province was not statistically significant.

There appear to be regional differences in that western Canadians tend to be the largest users of alternative health care providers and chiropractors. Percentage of alternative health care provider use is highest in the West with Saskatchewan (8%), followed by British Columbia (7%), Alberta (6%), and Manitoba (4%). However, note that Quebec is tied with British Columbia at 7% regarding alternative provider use. Within the chiropractor category, respondents from Manitoba used chiropractors more (18%) than did respondents from Alberta (17%), British Columbia (16%), and Saskatchewan (13%). Overall, respondents from the Maritime provinces are the lowest users of both alternative health care providers and chiropractors. Consequently, regional differences are evident when examining the use of alternative therapies by the

Table 8
Alternative Provider use by Province

	ALTERNATIVE HEALTH CARE PROVIDER					
	YES		NO			
PROVINCE	f	(%)	f	(%)	Total	(%)
Newfoundland	2	(1)	351	(99)	351	(100)
Prince Edward Island	1	(2)	78	(98)	78	(100)
Nova Scotia	13	(2)	534	(98)	534	(100)
New Brunswick	9	(2)	445	(98)	445	(100)
Quebec	313	(7)	4072	(93)	4072	(100)
Ontario	215	(3)	6330	(97)	6330	(100)
Manitoba	25	(4)	617	(96)	617	(100)
Saskatchewan	44	(8)	528	(92)	528	(100)
Alberta	87	(6)	1485	(94)	1485	(100)
British Columbia	153	(7)	2025	(93)	2025	(100)
Total	863	(5)	1646	(95)	16466	(100)
			6			

Chi-square = 145 df = 9, p<.05

Table 8 (Continued)
Chiropractor use by Province

	CHIROPRACTOR					
	YES		NO			
PROVINCE	f	(%)	f	(%)	Total	(%)
Newfoundland	6	(2)	347	(98)	353	(100)
Prince Edward Island	2	(2)	78	(98)	80	(100)
Nova Scotia	11	(2)	535	(98)	546	(100)
New Brunswick	24	(5)	430	(95)	453	(100)
Quebec	351	(8)	4032	(92)	351	(100)
Ontario	641	(10)	5903	(90)	641	(100)
Manitoba	117	(18)	526	(82)	117	(100)
Saskatchewan	75	(13)	497	(87)	75	(100)
Alberta	269	(17)	1302	(83)	269	(100)
British Columbia	344	(16)	1832	(84)	344	(100)
Total	1840	(11)	15483	(89)	1840	(100)

Chi-square = 302 df = 9, p<.05

respondents in this sample.

Question # 5: Health and Lifestyle, Mental Health, and Health Care Utilization analysis

The last research question inquires about the health and lifestyle behaviors, mental health perceptions and patterns of health care utilization. Regarding the health and lifestyle behaviors, cross-tabulation and chi-square analysis was conducted to determine if there were differences between the non-malignant pain and no-pain groups. Analysis of variance (ANOVA) was done on the mental health perceptions, the various health care utilization variables, and two health and lifestyle variables (years smoked and disability days) amenable to this type of analysis. These dependent variables are interval in structure and ANOVA, could be appropriately used in this analysis to examine how increased pain severity affected the various mental health perceptions and health care utilization variables. Tukey tests were also performed to determine which groups within the pain severity category had means that were significantly different from each other. Finally, logistic regression was conducted to answer the last part of this question which asked if any of the above variables influenced alternative health care.

Health and Lifestyle Behaviors in the Pain and No Pain groups

This section of the analysis examines several health and lifestyle behaviors in the non-malignant pain and no-pain sample. Specific behaviors examined included exercise habits, alcohol and drug use behaviors. Variables relating to working status and the reasons for not working were examined. Chi-square analysis of the pain and no-pain groups on these various health behaviors revealed the statistically significant differences which are presented on Table 9.

Table 9
Health and Lifestyle Behaviors by Pain and No-Pain

EXERCISE

	REGULAR		NOT REGULAR		iNFREQUENT			
PAIN	f	(%)	f	(%)	f	(%)	Total	(%)
Yes	1283	(47)	570	(21)	851	(32)	2704	(100)
No	7774	(57)	2826	(21)	2926	(22)	13527	(100)
Total	9057	(56)	3396	(21)	3777	(23)	16230	(100)

Chi-square = 135, df = 2, p<.05

TYPE OF DRINKER

	REGULAR		NOT REGULAR		FORMER		NEVER			
PAIN	f	(%)	f	(%)	f	(%)	f	(%)	Total	(%)
Yes	1352	(47)	655	(23)	545	(19)	305	(11)	2857	(100)
No	8104	(56)	2923	(20)	1561	(11)	1789	(12)	14377	(100)
Total	9456	(55)	3578	(21)	2106	(12)	2094	(12)	17234	(100)

Chi-square = 181, df = 3, p<.05

DRUG USE: NON NARCOTIC ANALGESICS

	YES		NO			
PAIN	f	(%)	f	(%)	Total	(%)
Yes	2151	(75)	702	(25)	2853	(100)
No	8407	(59)	5971	(41)	14377	(100)
Total	10557	(61)	6673	(39)	17231	(100)

Chi-square = 287, df = 1, p<.05

Table 9 (Continued)
Health and Lifestyle Behaviors by Pain and No-Pain

Table 9 (Continued)
Health and Lifestyle Behaviors by Pain and No-Pain

DRUG USE: TRANQUILIZERS

	YES		NO			
PAIN	f	(%)	f	(%)	Total	(%)
Yes	226	(8)	2627	(92)	2853	(100)
No	218	(2)	14159	(98)	14377	(100)
Total	444	(3)	16786	(97)	17231	(100)

Chi-square = 388, df = 1, p<.05

DRUG USE: ANTI-DEPRESSANTS

	YES		NO			
PAIN	f	(%)	f	(%)	Total	(%)
Yes	228	(8)	2626	(92)	2853	(100)
No	252	(2)	14126	(98)	14377	(100)
Total	479	(3)	16751	(97)	17231	(100)

Chi-square = 341, df = 1, p<.05

DRUG USE: NARCOTICS

	YES		NO			
PAIN	f	(%)	f	(%)	Total	(%)
Yes	291	(10)	2563	(90)	2853	(100)
No	435	(3)	13942	(97)	14377	(100)
Total	726	(4)	16505	(96)	17231	(100)

Chi-square = 302, df = 1, p<.05

WORKING STATUS

	WORKING		NOT WORKING		NO WORK/1 YR			
PAIN	f	(%)	f	(%)	f	(%)	Total	(%)
Yes	1209	(43)	170	(6)	1418	(51)	2798	(100)
No	8564	(64)	1167	(9)	3673	(27)	13404	(100)
Total	9773	(60)	1338	(8)	5091	(31)	16202	(100)

Chi-square = 582, df = 2, p<.05

Table 9 (Continued)
Health and Lifestyle Behaviors by Pain and No-Pain

REASON FOR NOT CURRENTLY WORKING

	ILLNESS		FAMILY RESP		LEAVE		LABOR DISPUTE		RETIRED		OTHER		TOTAL	
PAIN	f	(%)	f	(%)	f	(%)	f	(%)	f	(%)	f	(%)	f	(%)
Yes	369	(23)	226	(14)	98	(6)	96	(6)	669	(42)	130	(8)	1588	(100)
No	195	(4)	990	(21)	894	(19)	588	(12)	1568	(33)	584	(12)	4819	(100)
Total	564	(9)	1216	(19)	992	(16)	684	(11)	2237	(35)	714	(11)	6407	(100)

Chi-square = 735, df = 5, p<.05

Within the exercise category, people with pain exercised less frequently and were more infrequent exercisers than those without pain. Thirty two percent of respondents within the pain category exercised infrequently as compared to 22% of those without pain. This was found to be the highest percentage within all the exercise categories when examining the pain group. The highest percentage in the no-pain group was found in the regular exercise category, indicating that these people exercised on a regular basis.

In the type of drinker category, the results indicated a statistically significant difference, but analysis beyond that is unclear. Fifty six percent of the no-pain group are regular drinkers compared to 46% of the pain groups who are regular drinkers. Within the pain group were more occasional and former drinkers as compared to the no-pain group. This data suggests that people experiencing pain tend to drink less overall than others.

The largest percentage of users of analgesics was in the pain category (75%). Tranquillizers, antidepressants, and narcotic use was also substantially higher in the pain group than in the no-pain group (Table 9, pp. 64-66).

Throughout all the work status categories, the percentage of people not working was higher in the pain groups. For those people without pain, 64% were working as compared to 43% within the pain group. Fifty one percent of those respondents with pain had not worked for the past year as compared to 27% of those without pain. People with pain had a relatively high percentage of illness or disability (23%). Conversely, only 4% of illness or disability was revealed in the no-pain group.

Overall, in both the pain and no-pain groups retirement was the most common reason for not working. Further, more people with pain gave retirement as the reason for

not working (42%) compared to those without pain (33%).

Mental Health, Health Care utilization, Smoking, and Disability

In this discussion ANOVA was conducted on mental health perceptions, health care utilization patterns, and smoking and disability behaviors to determine if increased pain severity affected these variables. The post hoc test for the significant differences in means was also performed.

Table 10 presents the statistically significant differences between the means of the variables examined. Of note are the significant F tests and mean square differences. All the F tests were statistically significant ($p<.05$) and quite high. The largest F values are seen in the categories health in general (F=1103), number of G.P. visits (F=483), two week disability (F=399), mental health distress (F=377), and mastery (F=211). The mean differences between the categories of pain severity are larger in spread in the two week disability, mastery, mental health distress, sense of coherence, and number of G.P. visits. The variables "years smoked", and "number of nights overnight in a hospital/nursing home" have large mean differences within the pain severity categories, but smaller F scores. These two variables also have much smaller sample sizes relative to the other variables examined in this table.

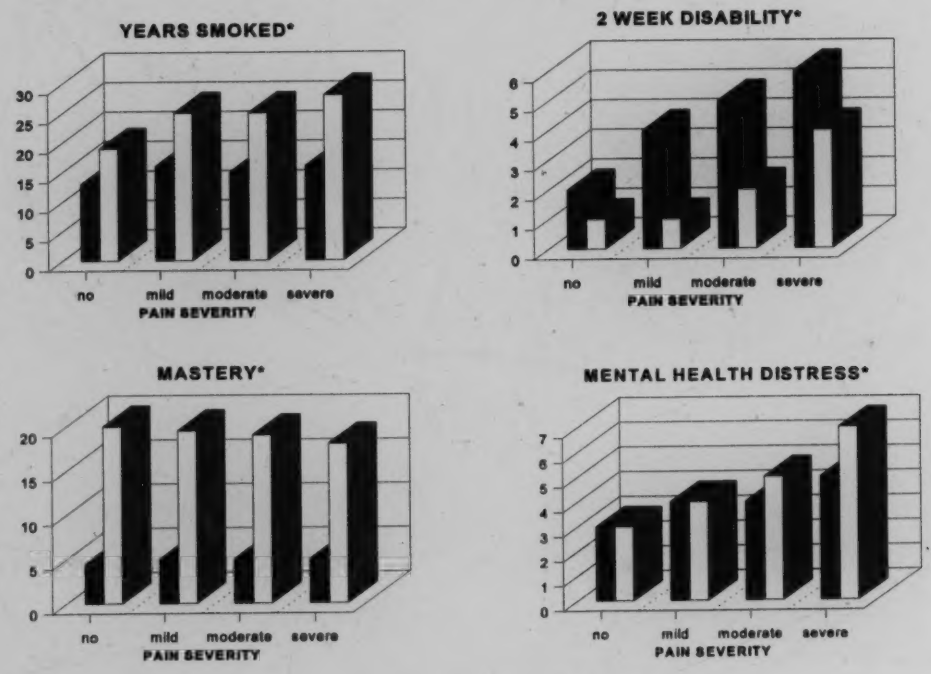
The ANOVA that was conducted indicated that all the dependent variables varied significantly with the level of pain severity as described above, and the Tukey tests further described the significant differences within the means. Although the variables as presented in Table 10 are all statistically significant, the sample sizes are large and there is very little spread among many of the means of the dependent variables. Table 11

Table 10
Summary of Lifestyle Behaviors, Mental Well-Being, and Health Care Utilization by Pain Severity

	PAIN SEVERITY							
	No Pain	Mild Pain	Mod. Pain	Severe Pain	N	Mean Squares Between	Within	F
HEALTH BEHAVIORS								
Years smoked	19	24	24	27	8321	13798	196	70
2 week disability	1	1	2	4	17252	2906	7	399
MENTAL HEALTH								
Health in general	2	3	3	4	17253	902	1	1103
Stress	2	2	3	3	14523	309	3	92
Self-esteem	20	20	19	19	16161	480	9	54
Mastery	20	19	18	16	15803	3734	18	211
Mental health distress	3	4	5	7	16171	4128	11	377
Sense of coherence	60	57	55	52	14313	1760	143	123
Depression	.3	1	1	1	16190	260	2	119
Social Support	4	4	4	3	16181	27	.4	58
HEALTH CARE UTILIZATION								
G.P. visits	3	4	6	8	17218	10268	21	483
Other M.D.	1	1	2	2	17237	685	4	174
Nurse visits	.2	.4	1	1	17245	180	2	86
Chiro visits	1	2	2	1	17246	948	12	76
Physio visits	.4	1	3	3	17247	3507	14	259
# nights overnight in hospital	6	7	9	11	1543	1156	64	18
Total Sample Size					**17332**			
p<.05								

Table 11

Means of Variables Years Smoked, 2 week Disability, Mastery, Mental Health Distress, Sense of Coherence, G.P. visits, and Number of Nights overnight in Hospital/Nursing Home by Level of Pain

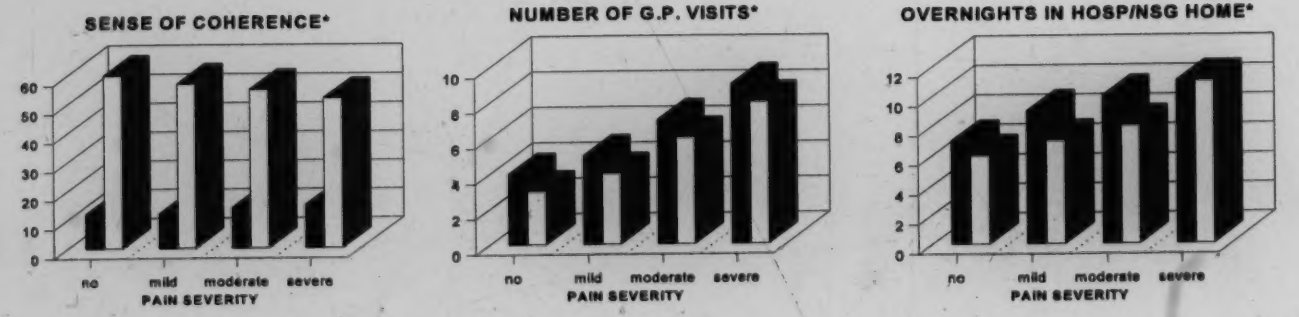


NOTE: Black bars attached to means represent standard deviations.

*p<.01

Table 11 (Continued)

Means of Variables Years Smoked, 2 week Disability, Mastery, Mental Health Distress, Sense of Coherence, G.P. Visits, and Number of Nights Overnight in Hospital/Nursing Home by Level of Pain



NOTE: Black bars attached to means represent standard deviations.

*p<.01

graphically represents the differences between the means within the severity of pain variable on each of the variables that had the largest mean differences. Tukey tests will be discussed as they relate to these graphic illustrations of the variables. Note that on these variables standard deviations are attached to the bars representing the means and are shaded to highlight the differences between the categories.

In general, the means of the variables presented in Table 11 show significant differences across the pain categories. Note that within the variable "years smoked" the average increased from 19 in the no pain category to 27 in the severe pain category. Standard deviations are widely dispersed about all of the means. The Tukey test revealed that the means differ significantly in the no pain and severe pain groups. This variable is more problematic to evaluate because the number of years smoked is more likely related to age than to pain severity and was not evaluated beyond this.

The two week disability variable reveals large mean differences between the no pain and severe pain groups. Disability days increase as pain severity increases. The Tukey test indicated that all the means between the groups are significantly different from each other. The standard deviations follow a linear pattern with the smallest dispersion occurring in the no pain group (SD=2) and the largest dispersion occurring in the severe pain group (SD=6) indicating greater variation in disability with increased pain.

The average scores on the mastery scale decrease from 20 in the no pain category to 16 in the severe pain category suggesting that as pain increases, people experience a diminished sense of control over their lives. Tukey tests confirmed that all the means

within the pain severity group are different from each other.

In the mental health distress category, the means follow a linear pattern with the average mental health distress scores increasing from 3 in the no pain category to 7 in the severe pain category. As pain increases, scores on the mental health distress scale increase. The Tukey test indicated that all the subsets of means are different.

The sense of coherence category follows a similar pattern. The average sense of coherence level decreases as pain severity increases. The Tukey test indicated that all the means within the pain categories are significantly different from each other.

In both the number of general practitioner visits and the number of nights overnight in a hospital or nursing home, a strong linear trend is evident. More doctor visits and overnight hospital stays are associated with increased pain severity. Standard deviations in both categories are largest in the moderate to severe pain groups indicating that the variation in visits increases with increased pain. Tukey tests revealed that there were no homogeneous subsets within the number of visits to a general practitioner category. In the number of nights overnight in the hospital category, the Tukey test indicated that moderate and severe pain differ significantly from the no-pain and mild pain groups. In addition, the no-pain and severe pain groups differ significantly from the mild and moderate pain categories.

Multivariate Analysis of Alternative Health Care use

The last part of this analysis was conducted to answer the last component of the final study question. This question asked what factors influenced use or non-use of alternative providers. In order to determine the factors that influence use or non-use of

alternative providers, logistic regression was performed. For the logistic regression two variables were combined to make a new independent variable called "newalt". This new variable was created by combining the chiropractor and alternative therapy use variables. Those respondents who had made 1 or more visits to a chiropractor over the past year were coded 1 while those respondents who had answered positively to use of an alternative provider over the past year were also coded 1. The independent variables selected in this analysis were chosen because previous analysis indicated that they were significantly related to alternative therapy and chiropractor use. Other variables were selected because they were significantly related to severity of pain. In previous analysis pain was shown to be significantly related to alternative therapy and chiropractor use. It was suspected that these additional variables might help predict the model. However, several of these additional variables were eliminated because of large numbers of missing cases. For example, 17% of cases were missing in the sense of coherence variable and 19% were missing in the number of nights overnight in the hospital/nursing home variable. All the remaining variables had 0-9% of missing cases. The total number of cases analyzed was 15,479.

The independent variables selected were grouped into three separate models. The first model contained the demographic characteristics. In model 2 variables measuring emotional well-being were entered into the logistic regression analysis. In the last model variables examining health care utilization and lifestyle behaviors were included in the analysis. Various independent variables were recoded into 1 or 0. These include gender (females=1, males=0), marital status (widowed/separated/divorced=1, all others=0), and

province (each individual province listed was recoded as 1, all others=0). British Columbia was the reference variable. The other variable in the model that was recoded in this manner included the drug use variables (each individual drug use variable was recoded as 1, all others=0). All other variables were on interval scales of measurement.

Table 12 illustrates all the models. The focus of this discussion is on Model 3. Note that gender (female) is highly significant (B=.2040, $p<.05$). Other variables which were highly significant in previous analysis also were in the multivariate analysis. This includes the education, income, and the provincial categories. Previous analysis indicated that education, income, and province were statistically significant when analyzed with alternative health care and chiropractor use. In the province category, note that the smallest users of alternative health care are people from the Maritime provinces. This was also evident in previous analysis. Mental health distress, mastery, and self-esteem are also statistically significant. Depression does not appear to have much of an effect.

Regarding the health care utilization and health behaviors categories, narcotic and non-narcotic use are significant as are the number of visits to a general practitioner and physiotherapist. Two week disability, frequency of physical activities, health in general, and severity of pain also are statistically significant.

In summary, it is evident that women, people from the western provinces, and others that use non-narcotic or narcotic analgesics are more frequent users of alternative therapies. An individual's level of mental distress, mastery, self-esteem, and pain also influences use. People who frequently consult other health care providers specifically

Table 12

Coefficients for Logistic Regression of use of Alternative Therapy Providers on Selected Independent Variables

Ind. Variables	Model 1		Model 2		Model 3	
1. Demographics	B	Sig	B	Sig	B	Sig
Gender	.2967	.0000*	.2678	.0000*	.2040	.0000*.
Age	.0188	.0053*	.0305	.0000*	.0130	.0030*
Wid/sep/dv	.0483	.5262	.0080	.9181	-.0035	.9649
Education	.05987373	.0000*	.0520	.0000*	.0529	.0000*
Income	.0540	.0000*	.0667	.0000*	.0769	.0000*
Nfld	-2.2318	.0000*	-2.1550	.0000*	-2.0658	.0000*
PEI	-1.7643	.0036*	-1.7799	.0052	-1.7603	.0060
NS	-1.6760	.0000*	-1.66955	.0000*	-1.7663	.0000*
NB	-1.1626	.0000*	-1.1520	.0000*	-1.1421	.0000*
Quebec	-.3670	.0000*	-.4077	.0000*	-.2905	.0002*
Ontario	-.5821	.0000*	-.5831	.0000*	-.5913	.0000*
Manitoba	.0725	.5299	.0746	.5338	.1082	.3735
Sask.	-.0430	.7347	.0084	.9491	.0209	.8757
Alberta	.1029	.2252	.803	.3649	.0999	.2709
2. Emotional Well-Being						
Mental H.D			.0559	.0000*	.0277	.0013*
Mastery			.0155	.0213*	.0213	.0019*
Self-esteem			.0160	.0844	.0201	.0345*
Depression			.0357	.0226*	.0080	.6240

Table 12 (Continued)

Coefficients for Logistic Regression of use of Alternate Therapy Providers on Selected Independent Variables

Ind. Variables	Model 1		Model 2		Model 3	
3. H. Care Util/Health Behaviors	B	Sig	B	Sig	B	Sig
Nonnarcotic					.2993	.0000*
Narcotic					.2168	.0336*
Tranquill					-.1021	.4709
Antidepress					.2429	.0658
No. GPvisit					.0224	.0000*
Other MD					.0144	.1923
Physio vis.					.0279	.0000*
2wk. Disab.					.0240	.0026*
Phys. Activ.					-.1202	.0001*
Health /Gen					.0874	.0033*
Pain Severity					.1658	.0000*
Constant	-2.5076	.0000*	-3.4211	.0000*	-4.0496	.0000*
Model Chi-square	458		486		772	
df	14		18		29	
Model Chi-square Sign.	.0000*		.0000*		.0000*	
N	16545		15479		15419	

*p < .05

general practitioners an physiotherapists, also tend to seek out alternative providers more commonly. Other factors that predict use of alternative therapies include level of education, income, number of disability days, and the frequency of physical activities. In addition, overall perceptions of general health help determine whether an individual chooses an alternative health care provider.

The third model is highly significant as evidenced by the model chi-square (722) with 29 df and $p<.0000$. This confirms the predictive power of the model and the independent variables which discriminate between those respondents use or non-use of alternative therapies.

The ability to predict alternative therapy use if an individual experiences pain is of particular interest and relevance in this study. Although a definitive conclusion about the predictive power of pain on alternative therapy use cannot be made, the statistical significance of pain in the model suggests that people with pain seek out alternative providers for a variety of reasons. One reason that people seek out alternative providers could be for the continuing management of chronic pain. Another reason may be related to emotional support that may be provided by the alternative therapist. In addition, it is possible that people with chronic, unremitting pain may seek out alternative providers because conventional medical therapies have failed them and any possible treatments offering pain relief are welcomed.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The results of this study indicate that 15% of Canadians within the chronic non-malignant pain population have used alternative therapies in the past 12 months before they were surveyed. This result differs from another recent study conducted by the Canadian Health Monitor (Canadian Medical Association Journal, 1991), which indicated that 20% of Canadians had used some form of alternative health therapy. The Eisenberg et al., (1993) study conducted in the United States indicated a much larger use of alternative therapies (34%).

Regarding the types of alternative therapies, the use of a chiropractor was most commonly used in the Canadian studies. The Canadian Health Monitor discovered that 9% of Canadians had used a chiropractor. In this study, 11% of the respondents had used a chiropractor within the past year. The Eisenberg et al., (1993) study revealed that 10% of Americans had used a chiropractor in the past 12 months which was second to relaxation techniques (13%).

In Canada, chiropractic use may be related to economics. Chiropractor services are covered by all the western provincial health insurance policies as well as Ontario. There is no provincial coverage available to citizens in Quebec and the Atlantic provinces (Canadian Life and Health Insurance Association, 1995).

Similar regional differences regarding patterns of use were also evident in both Canadian studies with the Atlantic provinces the lowest users of alternative health care

and the western provinces the highest users. The costs of alternative health care services are not covered by any provincial health insurance plans in Canada. As a result, explaining regional differences in alternative health care use becomes more problematic. It may be related to the high percentage of concurrent chiropractor and alternative provider use. If people are able to seek out the services of a chiropractor with minimal or no cost (through provincial health care insurance), perhaps the interest in other types of providers increases.

The differences between these studies is primarily related to the type of population sampled, the sampling methodology, and the definition of "alternative provider". This study examined the non-malignant Canadian population whereas the other studies examined the general population. Unconventional therapies are frequently used by people with cancer (Barsky, 1988; Smith, 1983). In addition, the study conducted by Eisenberg et al., (1993) incorporated their respondents use of commercial weight-loss programs into its alternative therapy category. The list of alternative providers provided to respondents by Statistics Canada did not specifically include the weight-loss category, nor was it listed under "other". Consequently, response rates may have been significantly altered because people with malignant disease were not included in this analysis and weight-loss programs were not considered to be an alternative therapy.

Lack of a consistent definition of what alternative providers or therapies are is problematic when designing a study. Seeking advice at a health food store or engaging in a commercial weight-loss program may be more related to health promotion or health maintenance than treatments administered to restore healing or health. Chiropractor use,

which was once considered to be on the fringes of mainstream medical treatment, is now recognized as being beneficial for certain types of medical conditions such as low back pain. Chiropractor use, as part of commonly accepted medical practice, appears to be more deeply embedded in American culture than in Canadian culture. This may be related to its development in Iowa in the late nineteenth century by Daniel Palmer (Kelner, Hall, & Coulter, 1980). This cultural preference was evident in this study when chiropractor use was examined by place of birth. People of American origin were the largest users of chiropractors.

Other cultural preferences were evident within the Asian population. Forty one percent of people of Asian origin used acupuncture. People of South African or African origin used homeo/naturopathy in much larger numbers(61%) than people born in Canada (31%). In all the categories of alternative health care use except "other", people born in Canada were the second highest users. This may be related to the cultural similarities that we share with the Americans influencing our use of chiropractors. It may also be intrinsic to Canada's multicultural diversity, in which healing traditions from various cultures have been maintained.

Clarity of what alternative therapies are within the context of lifestyle and cultural choices is being examined by the National Institute of Health (NIH) in the United States. In 1992 the NIH established the Office of Alternative Medicine (OAM) to clarify what alternative therapies include and to examine their efficacy. The OAM has divided alternative therapies into seven major categories including mind-body interventions, bioelectromagnetic treatments, alternative systems of medical practice, manual healing

methods, pharmacologic and biologic healing treatments, and herbal medicine (Gordon, 1996).

Attempts to examine the synthesis of traditional cultural medical practices such as acupuncture and ayurveda medicine within the modern biomedical and technological science of the twentieth century has lead to another definition of alternative therapies. The term "new medicine" examines healing and the restoration of health within the biomedical model with adjunctive use of other traditional approaches. Recognition is given to old traditional medical approaches as being part of the evolution of new medical practices (Gordon, 1996; Colt, 1996).

Similarities exist in studies regarding demographics and patterns of alternative therapy use. In this study, alternative therapies were most commonly used by women than men. Persons aged 25 to 39 who had more income and higher education also used alternative therapies more frequently. This demographic pattern was similar in the Eisenberg, et al. (1993) study.

This study revealed that people frequently used combinations of alternative therapies. Respondents most frequently used both a chiropractor and a homeopath or naturopath. Within the subcategories of alternative health care, massage and homeo/naturopathy were most frequently used. An identical pattern of concurrent use was also evident in the massage and "other" category. The more frequent use of a chiropractor in combination with a homeopath or naturopath may be related to coverage under a provincial health insurance plan. However, the conjunctive use of a homeopath or naturopath and another type of health care provider remains unclear. Similarly with the

massage and "other" category, it is unclear as to why these combinations were most commonly used. Interpretation is difficult because the reasons for why people chose these types of providers were not included as part of the survey questionnaire.

Prevalence of Chronic Non-Malignant Pain

Within this population 17% of respondents experienced non-malignant pain. The demographic pattern is similar to that found in other studies (Bonica, 1990). Females experienced pain more frequently, pain increased with age, and people who were widowed, divorced, or separated also experienced more pain. Chronic pain is associated with chronic conditions which often are related to gender and increase with age. Some specific conditions causing pain that are more frequently associated with females include arthritis and migraines (Statistics Canada, 1983). The prevalence of osteoarthritis tends to increase with age (Statistics Canada, 1983).

The implication that marital status (widowed, divorced, or separated), is related to pain is probably more due to the respondents ages than marital status in itself. It is probable that people within this category are older. For example, people who have been widowed are likely part of an older population as compared to people who are married or single.

This study reveals that income and level of education tends to decline and disability days and health care utilization increases in those people experiencing pain. In addition, the percentage of people with pain not working is over 50%. The most common reason for unemployment in all respondents was retirement with illness or disability as the second most common cause of unemployment. A higher percentage of retirement is

apparent in those people experiencing pain. It is plausible that these people are retiring earlier because of the effects of pain. It is well documented that chronic pain affects work attendance, incurs economic hardship, and limits opportunities for the individual (Statistics Canada, 1995). Societal costs through worker's compensation claims, increased health care utilization and decreased individual productivity are enormous (Bonica, 1990). The number of consultations to health care providers and increased consumption of medications by those experiencing chronic pain is reflected in direct costs to the health care system (Verbrugge & Patrick, 1995). This study revealed similar patterns. People with pain used significantly more analgesics, narcotics, tranquillizers, and antidepressants and made more visits to their doctor than those without pain. People experiencing severe pain made dramatically more visits to their general practitioner and spent significantly more nights in the hospital than those without pain. Visits to other medical doctors, nurses, chiropractors, and physiotherapists were significant but less dramatic when examining use of other health care providers by those with pain.

The increased use of antidepressants may be related to treatment of the pain problem itself and not necessarily the emotional effects of pain (Getto, Sorkness, & Howell, 1987). Respondents reported identical percentages of antidepressant and tranquillizer use. However, the question asking the respondents about tranquillizer use may have been problematic as the differences between the two drug categories was not clarified. Discernment between antidepressants and tranquillizers may have been difficult for the respondents. This lack of clarity may explain the identical percentages of use between these two types of drug categories.

Those people who had the strongest sense of coherence and mastery over their lives experienced the least amount of pain. People experiencing the highest levels of mental health distress also experienced the most pain. These were the most easily identifiable factors related to respondents experience of pain. Less significant and clear were the experiences of depression, self-esteem, general stress, and loss of social support in those people with pain. This may be related to the structure of the scales and how people in general rated themselves within these categories. To illustrate, the general stress and social support indexes asked a wide range of questions relating to a variety of factors influencing stress levels. These questions were not directly related to the effects of pain and therefore cloud interpretation. Also, measurement of the respondents responses to perceptions of their general health may have been too broad a categorization to appropriately interpret this in relation to the pain population. It is important to note that in all of these categories respondents on average rated their levels of depression, stress, and mental health distress as low. In turn, people rated their sense of mastery and coherence relatively high. For example, on a mastery scale of 2 to 28 the mean was 20. In the sense of coherence scale the range was from 4 to 78 with a mean of 59. In both scales higher numbers indicated higher mastery or a stronger sense of coherence. In addition, people's perceptions of their general overall health was rated as very good (average score =2, with 1 indicating excellent health).

People with pain used alternative therapies more frequently than those without pain. In this study, people who did experience pain used a chiropractor or an alternative health care provider to the same degree. This pattern of use was different in the general

population in which treatment from a chiropractor was more prevalent than treatment from an alternative provider. This suggests that people with pain use various and additional types of alternative therapies in coping with their pain.

The incidence of alternative therapy use increased in those people with pain. Of the types of alternative health care providers, massage therapy was most commonly used in both groups.

The multivariate analysis which examined the pattern of alternative therapy use confirmed various aspects of the bivariate analysis. Females, and people with a higher education and income reflected a higher rate of use. Lower rates of use were seen in the Atlantic provinces. People experiencing good overall mental health also were reflected in the model but to a smaller degree. Regarding health care utilization, people who used both non narcotic analgesics and narcotic analgesics were higher users of alternative health care. The number of visits made to a general practitioner and a physiotherapist predicted the model but to a lesser degree. The number of disability days and the respondents rating of their overall health were also influencing factors. However, the severity of pain that people experienced was highly predictive of use of alternative therapy. In general, the higher the severity of pain, the more likely people are to have used some type of alternative provider.

Limitations

Determining if alternative therapies effectively controlled pain was one of the limitations of the study. Respondents who indicated that they had used alternative therapies within the past 12 months were not asked about effectiveness of use and reasons

for seeking out an alternative provider. As a result, answering this question was not possible.

The results of this study are generalizable only to the population sampled. Those individuals who were hospitalized or living in a residential care facility were not surveyed. It is presumable that many of these individuals are suffering from chronic illnesses which are painful in nature. As a result, the prevalence of pain in this study may have been underestimated.

Other limitations regarding the secondary analysis involved examination of the variables of interest. In particular, it is unclear as to how the primary list of alternative therapies and the "other"category was devised. Also, the use of the term "alternative" when used in conjunction with health care provider may have been unclear to some respondents. In addition, the questions used to assess chronic pain asked the respondents only if they had pain and if so, they were asked to describe its intensity. They were also asked if pain limited any of their normal activities. This may not have given an accurate or truly complete indication of chronic pain. As previously discussed in the review of the literature, indicators of chronic pain such as persistent pain lasting beyond normal healing time or pain lasting longer than six months were not presented to the respondents. Pain also has cultural and social meanings that are inter-related with a person's cultural background, level of education, and income. All of these factors could have affected how different individuals responded to the pain questions.

Additional limitations involve methodology and sampling errors that are intrinsic to many large surveys that are no longer visible when conducting a secondary analysis.

This would include interviewing, coding, and keypunching errors. The NPHS was an extensive questionnaire that took some time to complete and relied upon self-report from the respondents. Respondents may have become fatigued thereby limiting the reliability of the responses. Relying on self-report may also present concerns as it is difficult to validate the responses.

Implications for Research

Further analysis of residents in hospitals or residential care facilities would further determine the prevalence of chronic pain. The NPHS is a longitudinal study involving follow-up of the 1994 panel respondents. Although there are inherent problems in longitudinal designs such as nonresponse bias related to people who move or become difficult to locate, the potential for determining the long term course of chronic pain is helpful. In addition, patterns of health care use and behavioral and mental health risk factors related to chronic pain could be more clearly determined. As a result, the plans to continue the NPHS on a panel of selected respondents at two year intervals provides an opportunity to gather information related to issues regarding chronic pain.

Further development and refinement of those therapies considered to be "alternative" and most prevalent within the Canadian context would aid in obtaining uniform and consistent information about regional differences. Assessment of those therapies most effective in managing chronic pain and its emotional and physical effects upon people would provide important direction for future research into efficacy of alternative therapies.

Implications for Health Services

Evaluation of the efficacy of alternative therapies may influence future governments recommendations regarding the legislation of health care providers. Rapid changes are occurring within various provinces. In Alberta acupuncture is now legislated and regulated by the Health Disciplines Act. Acupuncturists must write a standardized exam in order to be registered with the Acupuncture Society of Alberta. In the fall of 1997 a three year acupuncture training program will be initiated at the Southern Alberta Institute of Technology (personal communication, Acupuncture Society of Alberta, March 1997). The Alberta Heritage Foundation for medical research has recently completed a survey on alternative interventions. The purpose of this survey was to identify the most commonly requested alternative interventions made by the public to the College of Physicians and Surgeons and the provincial medical insurance plan (Alberta Heritage Foundation for Research, 1997).

The Atlantic provinces have not traditionally recognized and funded chiropractor services. However, Newfoundland recently recognized chiropractors as a professional association in 1993 (Costa Papadopolous, personal communication, Canadian Chiropractor Association, March 12, 1997). Such heightened government interest in expanding the choice of health care provider for its citizens has created new systems of professional self-governance and decreased the hierarchy between professions. Changes such as these could ultimately affect the future direction and distribution of health care monies.

Implications for Nursing

The results of this study have implications for nursing practice, research, and

education. Many of the alternative therapies that are sought by people are non-invasive in nature. Nurses are in a unique position to safely provide some of these therapies within the therapeutic relationship, and to teach multiple self-care modalities in order to enable individuals to better manage their health. Ongoing research into the efficacy of alternative therapies and nurses roles in providing them is warranted. For example, a great deal of interest has been generated by the media in therapeutic touch; an alternative therapy frequently practiced by nurses. The nursing profession would benefit by increasing its knowledge base on the effectiveness of therapeutic touch and other alternative modalities that traditionally focus on the whole person. Nursing is a profession that understands and accepts therapies that might otherwise be considered to be outside the framework of modern medical therapy. Consequently, there is future potential for nurses to be actively involved in the education and the practice of safe alternatives which recognizes the uniqueness of the individual's mind-body experience.

Summary

The growing body of information and interest in alternative therapies is seen daily in the popular literature, in the scientific community as it examines the efficacy of various unconventional therapies, and in government response to increased public interest. Western medical techniques have made tremendous medical and technological strides within the twentieth century. The tremendous strengths of western medicine are seen primarily in its treatment of infectious diseases and trauma. In some ways these strengths have served to highlight its limitations. These limitations are particularly evident in the treatment of chronic diseases such as pain for which western medicine can often only

offer symptomatic relief. To casually dismiss the increasing interest and use of alternative therapies as placebo effect in the treatment of chronic pain is too simplistic an answer in view of the complexity of pain.

To illustrate, old ideas about different cultural methods of medical treatment are being disproved. Acupuncture treatment is an example of how ancient explanations have been critically explored to reveal new evidence about its effectiveness in treating pain. Recent advances in pain research indicate that the restoration of "chi" through needling involves complex physiologic effects involving elevated serotonin levels and other neurotransmitters. These biochemical effects are responsible for acupuncture's effect in reducing pain. Other alternative therapies appear to enhance the body's capacity for healing by optimizing and fortifying health in the presence of disease. Continued study on the efficacy of safe, less risky alternative interventions seems prudent. Ongoing re-evaluation of current health care policies involving the regulation of other alternative providers within the mainstream health care system is likely. It is apparent that the tremendous upsurge of interest in alternative therapies may be reflective of a new, evolutionary vision of health and medical care and that ongoing research into the effectiveness of these therapies is warranted.

References

Aakster, C. W. (1986). Concepts in alternative medicine. Social Science Medicine, 22(2), 265-273.

Aldridge, D. (1990). The delivery of health care alternatives: discussion paper. Journal of the Royal Society of Medicine, 83, 179-182.

Antonovsky, A. (1979). Health, Stress, and Coping. San Francisco: Jossey-Bass.

Arthritis Society (1991). Prevalence of arthritis in Canada. Toronto: Author.

Barsky, A. J. (1988). Worried sick: Our troubled quest for wellness. Boston: Little, Brown.

Barton, P. M. (1995). Chronic pain management for the family practitioner. The Canadian Journal of Continuing Medical Education, 7(8), 73-82.

Berger, E. (1990). The Canada Health Monitor (Survey #4, July-August). Toronto, Ontario: Price Waterhouse.

Bhatt-Sanders, D. (1985). Acupuncture for rheumatoid arthritis: An analysis of the literature. Arthritis Rheumatology, 14, 225-231.

Birse, E. (1994). Prevalence of chronic pain. Master's thesis, University of Alberta, Edmonton, Alberta, Canada.

Boisset, M., & Fitzcharles, M. (1994). Alternative medicine use by rheumatology patients in a universal health care setting. The Journal of Rheumatology, 21(1), 148-152.

Bonica, J. J. (1990). General considerations of chronic pain. In J. J. Bonica (Ed.), The Management of Pain, 1. (pp. 180-196). Philadelphia: Lea & Febiger.

Brink, P., & Wood, M. (1989). Basic steps in planning nursing research. Boston: Jones & Bartlett.

Buckman, R., & Sabbagh, K. (1995). Magic or medicine. Amherst, NY: Prometheus Books.

Burckhardt, C. (1990). Chronic pain. Nursing Clinics of North America, 25, 863-870.

Canadian Life and Health Insurance Association Incorporated. (1995). Health services across Canada at a glance Toronto, ON: Author.

Christenson, J. L. (1993). Chronic pain: Dynamics and treatment strategies. Perspectives in Psychiatric Care, 29(1), 13-17.

Colt, G. H. (1996, September). See me, feel me, touch me. Life, 35-50.

Corey, D. (1988). Pain: Learning to live without it. Toronto, ON: Macmillan Canada.

Crombie, I. K., Davies, H. T. O., & Macrae, W. A. (1994). The epidemiology of chronic pain: Time for new directions. Pain, 57,1-3.

Dana, R. H. (1985, April). Sense of coherence: Examination of the construct. Paper presented at the Southwestern Psychiatric Association, Austin, Texas.

Demo, D. H. (1985). The measurement of self-esteem: Refining our methods. Journal of Personality and Social Psychology, 48, 1490-1502.

Eadie, M. (1990). Acupuncture and the relief of pain. The Medical Journal of Australia, 153, 180-181.

Eagly, A. H. (1967). Involvement as a determinant of response to favorable and

unfavorable information. Journal of Personality and Social Psychology, 4(3, Part 2), Whole number 643.

Eisenberg, D. M., Kessler, R. C., Foster, C., Norlock, F. E., Calkins, D. R., & Delbanco, T. L., (1993). Unconventional medicine in the United States: Prevalence, costs, and patterns of use. The New England Journal of Medicine, 328, 246-252.

Eppinger, M. G., & Lambert, M. J. (1883). Assessment of habit disorders: A tripartite perspective in measuring change. In M. J. Lambert, E. R. Chistensen, & S. S. Dejulio (Eds.), The Assessment of Psychotherapy Outcome (pp. 356-405). New York: John Wiley.

Fernandez, E., & Turk, D. C. (1989). The utility of cognitive coping strategies for altering pain perception: A meta-analysis. Pain, 38, 123-135.

Fleming, J. S., & Courtney, B. E. (1984). The dimensionality of self-esteem: Hierarchal facet model for revised measurement scales. Journal of Personality and Social Psychology, 48, 404-421.

Getto, C. J., Sorkness, C. A., & Howell, T. (1987). Antidepressants and chronic pain. Journal of Pain and Symptom Management, 2(1), 9-18.

Gevitz, N. (1988). Three perspectives on unorthodox medicine. In N. Gevitz (Ed.). Unorthodox Medicine in America. (pp. 1-28). Baltimore: John Hopkins University Press.

Gillick, M. R. (1985). Common-sense models of health and disease. New England Journal of Medicine, 313, 700-703.

Goldman, B. (1991). Chronic pain and the search for alternative treatments. Canadian Medical Association, 145, 508-513.

Gordon, J. (1996). Alternative medicine and the family physician. American Family Physician, 54, 2205-2212.

Heidt, P. (1990). Openness: A qualitative analysis of nurses' and patients' experiences of therapeutic touch. IMAGE: Journal of Nursing Scholarship, 22, 180-186.

Howell, S. (1994). Natural/alternative health care practices used by women with chronic pain: Findings from a grounded theory research study. Nurse Practitioner Forum, 5(2), 98-105.

Hyman, R. B., Feldman, H. R., & Harris, R. B. (1989). The effects of relaxation training on clinical symptoms: A meta-analysis. Nursing Research, 38, 216-220.

Jarvis, W. (1992). In response to position paper by National Council against health fraud [Letter to the editor]. Clinical Journal of Pain, 8(1), 67-68.

Jensen, M. P., Turner, J. A., Romano, J. M., & Karoly, P. (1991). Coping with chronic pain: A critical review of the literature. Pain, 46, 249-289.

Keefe, F., & Williams, D. A. (1990). A comparison of coping strategies in chronic pain patients in different age groups. Journal of Gastroenterology, 45, 161-165.

Kelner, M., Hall, O., & Coulter, I. Chiropractors: Do they help? Fitzhenry and Whiteside.

Kessler, R.C., McGonagle, K.A., Zhao, S., Nelson, C.B., Hughes, M., Eshleman, S., Wittchen, H., Kendler, K. S. (1994). Lifetime and 12 months prevalence of DSM-III-R Psychiatric disorders in the United States: Results from the National Cormorbidity

Survey. Achives of General Psychiatry, 51, 8-19.

Kish, L. (1987). Statistical design for research. New York: John Wiley & Sons.

Kleinman, A. (1981). Patients and Healers in the context of culture: An exploration of the borderland between anthropology, medicine, and psychiatry. Berkeley, CA: University of California Press.

Kleinman, A., Eisenberg, L., & Good, B. (1978). Culture, illness, and care: Clinical lessons from anthropologic and cross-cultural research. Annals of Internal Medicine, 88, 251-258.

Kronenfield, J. J., & Wasner, C. (1982). The use of unorthodox therapies and marginal practitioners. Social Science Medicine, 16, 1119-1125.

Lowry, F. (1995). Scientific chiropractors hope to improve status of chiropractic within scientific community. Canadian Medical Association Journal, 152, 402-404.

Malone, M. D., & Strube, M. J. (1988). Meta-analysis of non-medical treatments for chronic pain. Pain, 34, 231-244.

Marshall, G. N., & Lang, E. L. (1990). Optimism, self-mastery, and symptoms of depression in women professionals. Journal of Personality and Social Psychology, 59(1), 132-139.

McCaffery, M. (1989). Nursing management of the patient in pain, (3rd ed.). Philadelphia: J. P. Lippincott.

Meinhart, N. T., & McCaffery, M. (1983). Pain: A nursing approach to assessment and analysis. Norwalk, CT: Appleton-Century-Crofts.

Melzack, R. (1973). The puzzle of pain. New York: Basic Books.

Melzack, R., & Wall, P. A. (1965). Pain mechanisms: A new theory. Science, 150, 971-979.

Melzack, R., & Wall, P.A. (1982). The challenge of pain. New York: Basic Books.

Mersky, H., & Bogduk, N. (Eds.). (1994). Classification of chronic pain: Descriptions of chronic pain syndromes and definitions of pain terms (2nd ed.). Seattle, WA: IASP press, International Association for the study of pain.

Montbriand, M. J., & Laing, G. P. (1991). Alternative health care as a control strategy. Journal of Advanced Nursing, 16, 325-332.

Moore, J., Phipps, K., Marcer, D., & Lewith, G. (1985). Why do people seek treatment by alternative medicine? British Medical Journal, 290, 28-29.

Murray, R. H., & Rubel, A. (1992). Physicians and healers: Unwitting partners in health care. The New England Journal of Medicine, 326, 61-64.

Northcott, H. C., & Bachynsky, J. A. (1993). Concurrent utilization of chiropractic, prescription medicines, nonprescription medicines, and alternative health care. Social Science Medicine, 37, 431-435.

O'Brien, E. (1985). Global self-esteem scales: Unidimensional or multidimensional? Psychological Reports, 57, 383-389.

One in five Canadians is using alternative therapies, survey finds. (1991). Canadian Medical Association Journal, 144, 469.

Orme, J. (1986). Factorial and discriminant validity of the center for epidemiological studies depression (CES-D) scale. Journal of Clinical Psychology, 42(1),

28-33.

Owens, M. K., & Ehrenreich, D. (1991). Literature review of nonpharmacologic methods for the treatment of chronic pain. Holistic Nursing Practice, 6(1), 24-31.

Patel, M., Gutzwiller, F., Paccaud, F., & Marazzi, A. (1989). A meta-analysis of acupuncture for chronic pain. International Journal of Epidemiology, 18, 900-906.

Pearlin, L., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. Journal of Health and Social Behavior, 22, 337-56.

Pearlin, L., & Schooler, C. (1978). The structure of coping. Journal of Health and Social Behavior, 19, 2-21.

Rosenberg, M. (1979). Conceiving the self. New York: Basic Books.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Rumbaut, R. G., & Dana, R. H. (1992). Antonovsky sense of coherence scale. In D. Keyser, & R. Sweetland (Eds.), Test Critiques, IX, Austin, Texas: Pro.ed.

Rumbaut, R. G. (1983). Stress, health, and the sense of coherence. In M. J. Magenheim (Ed.), Geriatric Medicine and the Social Sciences, Philadelphia: Saunders.

Russell, J. K. (1994). Bodywork: The art of touch. Nurse Practitioner Forum, 5(2), 85-90.

Savin-Williams, R. C., & Jaquish, G. A. (1981). The assessment of adolescent self-esteem: A comparison of methods. Journal of Personality, 49, 324-336.

Shevlin, M. E., Bunting, B. P., & Lewis, C. A. (1995). Confirmatory factor analysis of the Rosenberg self-esteem scale. Psychological Reports, 76, 707-710.

Shipley, M., Berry, H., Broster, G., Jenkins, M., Clover, A., & Williams, I. (1983). Controlled trial of homeopathic treatment of osteoarthritis. Lancet, 1, 97-98.

Simon, J. M. (1989). A multidisciplinary approach to chronic pain. Rehabilitation Nursing, 14(1), 23-28.

Smith, I. W., Airey, S., & Salmond, S. W. (1990). Nontechnologic strategies for coping with chronic low back pain. Orthopaedic Nursing, 9(4), 26-34.

Smith, T. (1983). Alternative Medicine. British Medical Journal 287, 307-8.

Soeken, K., & Carson, V. (1987). Responding to the spiritual needs of the chronically ill. Nursing Clinics of North America, 22(3), 603-611.

Statistics Canada (1996). Health Reports, 7(4), 9-53. Ottawa: Author.

Statistics Canada (1995) Health Reports, 7(1), 29-39. Ottawa: Author.

Statistics Canada (1995) A portrait of persons with disabilities. (No. 89-542E).

Statistics Canada (1994-95). National population health survey overview. (No. 82-567). Ottawa: Author.

Statistics Canada (1986). Report of the Canadian health and disability survey. (No. 82-555 E). Ottawa: Author.

Statistics Canada (1983). Perspectives on health. (No. 82-540E).

Stephens, R. (1993). Imagery: A strategic intervention to empower clients. Part I - Review of research literature. Clinical Nurse Specialist, 7(4), 170-174.

Sutherland, L. R., & Verhoef, M. (1994). Why do patients seek a second opinion or alternative medicine? Journal of Clinical Gastroenterology, 19(3), 194-197.

Taylor, A. (1988). Chronic pain: A guide to nursing intervention. Applied Nursing

Research, 1(1), 8-13.

Ter Riet, G., Kleijnen, J., & Knipschild. P. (1990). Acupuncture and chronic pain: A criteria-based meta-analysis. Journal of Clinical Epidemiology, 43(11), 1191-1199.

Tulder, M W., Koes, B. W., & Bouter, L. (1995). A cost-of-illness study of back pain in the Netherlands. Pain, 62, 233-240.

Turk, D. C., & Rudy, T. E. (1989). A cognitive-behavioral perspective on chronic pain: Beyond the scalpel and syringe. In C. D. Tollinson (Ed.). Handbook of chronic pain management. Baltimore: Williams & Wilkins.

Turner, R. J., & Noh, S. (1988). Physical disability and depression: A longitudinal analysis. Journal of Health and Social Behavior, 29, 23-37.

Verbrugge, L. M., & Patrick, D. L. (1996). Seven chronic conditions: Their impact on US adult's activity levels and use of medical services. American Journal of Public Health, 85(2), 173-182.

Verhoef, M., Russell, M., & Love, E. J. (1994). Alternative medicine use in rural Alberta. Canadian Journal of Public Health, 85(5), 308-309.

Visser, G. J., Peters, L., & Rasker, J. J. (1992). Rheumatologists and their patients who seek alternative care: An agreement to disagree. British Journal of Rheumatology, 31, 485-490.

Von Korff, M., Dworkin, S. F., & Le Resche, L. (1990). Graded chronic pain status: An epidemiologic evaluation. Pain, 40, 279-291.

Walding, M. (1991). Pain, anxiety, and powerlessness. Journal of Advanced Nursing, 16, 388-397.

Walker, D. (1995). A message from the President of the College of Physicians and Surgeons of Ontario. Members Dialogue, 3(5), 3-5.

Wright, S. (1987). The use of therapeutic touch in the management of pain. Nursing Clinics of North America, 22(3), 705-714.

Zitman, F., Linssen, A., Edelbrock, P., & Stijnen, T. (1990). Low dose amitriptyline in chronic pain: The gain is modest. Pain 42, 35-42.

Appendix

Description of Variables used in Secondary Analysis

The following descriptions of some of the variables used in the secondary analysis are listed below. A brief description of the level of measurement is given as necessary.

Variables

1. How many times have you consulted with a chiropractor in the past 12 months? An interval range of 0-31 was given.

2. Have you consulted with an alternative health care provider in the past 12 months? This question and the other four questions asking about massage, acupuncture, homeo/naturopathy, and "other" use were dichotomous in structure (yes/no).

3. How many times have you consulted with a general practitioner in the past 12 months? All questions asking about use of health care providers such as nurses and physiotherapists, were interval in design. Ranges of responses were from 0- 31 for G.P. and physiotherapist visits and 0-12 for the other type of doctor and nurse categories.

4. In general, how would you describe your health? The respondents rated their health from 1 (excellent) to 5 (poor).

5. In the past month did you take pain relievers? This question and all the other questions asking about drug use (tranquillizers, antidepressants, narcotics) were dichotomous in structure.

6. Province at time of interview. This and other questions such as marital status were nominal in design.

Appendix (Continued)

Derived Variables

1. Number of years smoked. This was based upon respondents who were daily smokers or former daily smokers. For example, for daily smokers the number of years smoked was obtained by subtracting the age the respondents began smoking from their current age.

2. Type of drinker and frequency of physical activities categories. These were based upon previous questions which determined if respondents consumed alcohol or took part in a physical activity and how often they did these activities.

3. General chronic stress index. This was the sum of all true responses from 11 questions answered by all respondents. Respondents were asked a wide range of questions about their stress level regarding money, negative personal and environmental influences, and ongoing personal and family related health concerns. The range of responses was from 0-11 with scores of 11 indicating the highest stress level.

4. Self-esteem index. This index is based upon the Rosenberg (1965) self-esteem index. It is composed of 6 questions which asks respondents to rate themselves from 0 (strongly agree) to 4 (strongly disagree) on items evaluating self perceptions of success, worth, and positive attitudes. The sum of all of these items was scaled from 1-24 with the higher scores indicating greater self-esteem.

5. Mastery index. This questionnaire is based upon the work of Pearlin and Schooler (1978). Respondents answers are based upon a five point scale: 0 (strongly agree) to 4 (strongly disagree). This index was the sum of 7 questions asking the respondents to evaluate issues related to control over their lives. The responses ranged from 2 to 28 with

Appendix (Continued)

higher scores indicating superior mastery.

6.Sense of coherence scale. Antonovsky (1979) first developed this index. Thirteen items measuring individuals perception of events as manageable and meaningful were summed with scores ranging from 4-78. Higher scores indicate a stronger sense of coherence.

7. Mental health distress score. These scores are derived from the Composite International Diagnostic Interview (CIDI) which is a diagnostic instrument based upon the definitions and criteria of the International Classification of Diseases (ICD-10).This scale ranging from 0-24 is based upon 6 questions ranging from 5 (all of the time) to 1(none of the time). It asked respondents to rate their emotional well-being. For example, during the past month how often did the respondents feel sad, nervous, restless or hopeless? Higher scores revealed more distress.

8. Depression scale. Based on a scale from 0 to 8 and selected from the CIDI as part of the ICD-10, 28 questions asked respondents about sleeping habits, ability to concentrate, weight gains or losses, and feelings of sadness. The questions were a mix of dichotomous and interval levels of measurement. Higher scores indicate evidence for depression.

9. Social support index. This index is composed of four items asking respondents if they have someone they feel that they can confide and count on. They are also asked if they have someone who gives them advice and makes them feel loved. Higher scores indicate greater perceived social support.

Source. Statistics Canada (1995). National population health survey: microdata files. Author: Ottawa